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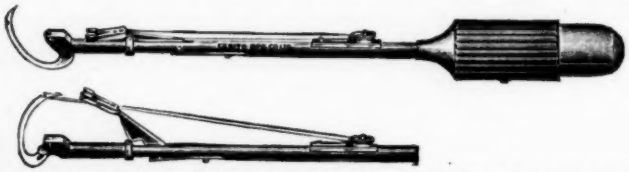

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LECTURE III.

Benign Tumours as Precursors of Cancer.

IT is an easy matter to compile a list of well-authenticated instances of malignant disease arising in pre-existing simple tumours. In certain situations and in certain circumstances papillomas of squamous epithelial surfaces are notoriously prone to pass into a malignant phase. Warts of the lips and tongue, for example, must always be viewed with the gravest suspicion, and measures for their eradication instituted without delay. Too often these apparently benign formations are merely a passing phase in the proliferative process, comparable to the early papillomatous stage of experimental tar cancer. In the same way the scrotal cancer of mule-spinners and workers in pitch and tar, and X ray and radium cancer, nearly always pass first through a phase of apparently benign proliferation. Malignant melanoma arising in simple moles, the sarcomatous metamorphosis of uterine fibroids, and of the stroma of certain fibro-adenomas of the breast are further cases in point.

In the alimentary tract the outstanding example of a definitely precancerous lesion of a benign neoplastic kind is the adenomatous polypus of the colon, rectum, and stomach. It is only within recent years, however, that the very considerable frequency of intestinal polypi and their pronounced tendency to malignant change have come to be adequately recognised (Lockhart-Mummery 1923, Erdmann and Morris 1925, Dukes 1925–26, Schmieden 1926, Lockhart-Mummery and Dukes 1928, Kutsukake 1928, Susman 1929). In the stomach similar tumours occur, but with much less frequency. Here also it would seem they must be regarded as definitely precancerous (Ménétrier 1888, Ménétrier and Clunet 1907, Mills 1922–23, Brunn and Pearl 1926, Stewart 1929, Miller, Eliason, and Wright 1930).

The tumours in question are histologically adenomatous, and start as small flat patches of mucosal overgrowth which soon become polypoidal. There is much variation in the number present. In the post-mortem room solitary polypi are most common, and cases with a few scattered polyps, from two to a dozen or so, come next in frequency. In my series of 127 autopsy cases, solitary polypi of the colon existed in 70, several polyps in 43, and in the remaining 14 they were present in large numbers. In the stomach a somewhat similar state of affairs exists. In my series of 56 cases there were single polyps in 33, several polyps in 11, and numerous polyps in 12. Rarely gastric polypi overflow, as it were, into the duodenum, and there may be polyps in the colon as well.

The term "polyposis intestini" is reserved for a very rare but important variety of this disease, in which the mucosa of the large intestine is thickly studded with innumerable polypoidal adenomata. This would appear to be merely an extreme grade of the condition of multiple polypi already mentioned, were it not that there is a constitutional hereditary factor non-existent in the more banal variety. Dukes (1930) has collected the pedigrees of the 13 families so far reported as suffering from this disease, and the result is a convincing demonstration of its hereditary character and relation to carcinoma. The disease attacks several members of a family, the predisposition to it is transmitted as a Mendelian dominant from one generation to the next, and almost invariably it ends in carcinoma of the colon or rectum.

ORIGIN OF POLYPI.

How do polypi of the stomach and intestine arise? Only a small proportion have their origin in some definite pre-existing inflammatory lesion, ulcerative colitis, tuberculosis, especially the hyperplastic type, simple inflammatory stricture (Lockhart-Mummery 1923). In most cases there are no assignable ætiological factors, although a chronic inflammatory origin is hypothecated by both Ménétrier (1924) and Ewing (1928). Anatomically, the identity between the individual lesions of this common variety and those of the rare familial type—they appear to be indistinguishable—is against a local inflammatory causation, as is the fact that cases of widespread multiple polypi are occasionally met with in which stomach, duodenum, and colon are all involved.

TABLE XVII.—*Incidence of Carcinoma and Polypi of the Colon.*

(12,800 post-mortems at all ages.)

Period.	Autopsies.	Carcinoma coli.		Polypi of colon.	
		No.	Per cent.	No.	Per cent.
1910–21	5880	200	3·4	17	0·29
1922–28	5105	194	3·8	34	0·67
1929–31 (in part) ..	1815	79	4·3	76	4·19

TABLE XVIII.—*Incidence of Polypi in Carcinoma of the Colon.*

(12,800 autopsies at all ages.)

Period.	Cases of carcinoma coli.	Associated with polypi.	Incidence (per cent.).
1910–21	200	6	3·0
1922–28	194	17	8·9
1929–31 (in part) ..	79	21	26·6

A study of the Leeds autopsy records for the past 21⅓ years, from the point of view of the incidence of intestinal polypi, has been very illuminating. They have been divided into three periods: (1) 1910–1921 inclusive, the pre-war, war, and immediately post-war period; (2) 1922–1928 inclusive; and (3) from the beginning of 1929 to date. The reason for the separation of the third group is that during this period a much more detailed study of the large intestine has been in progress, practically all adults coming to autopsy having the gut closely scrutinised. Some of the results of this inquiry are shown in Tables XVII. and XVIII.

It is clear from these tables that only the records of the last two years and four months are of any value for the investigation of this problem, and it seems likely that even they fall short of the truth. For Dukes (1925–26) in a very thorough investigation of

* The Croonian Lectures delivered before the Royal College of Physicians of London on June 4th, 9th, and 11th, 1931. Lectures I. and II. appeared in THE LANCET of Sept. 12th and 19th respectively.

33 consecutive cases of carcinoma of the rectum and sigmoid at St. Mark's Hospital, found adenomata, some at a very early stage, in no fewer than 25—i.e., 75 per cent. In my series the data for the stomach are probably more uniformly reliable, and so in Table XIX., whereas the figures for the intestine relate only to the period since Jan. 1st, 1929, those for the stomach cover the whole period of 21½ years.

TABLE XIX.—*Incidence of Carcinoma in Cases with Gastric and Intestinal Polypi.*

—	Number of cases.	Number with cancer associated.	Incidence (per cent.).
Stomach (12,800 autopsies)—			
Single polypi	33	8	24
Two or more polypi	23	7	30
—	56	15	27
Incidence of cancer of stomach generally			2·5
Incidence in cases aged 30 and over..			4·0
Colon (1815 autopsies)—			
Single polypi	40	8	20
Two or more polypi	36	13	36
—	76	21	28
Incidence of cancer of colon generally			3·7
Incidence in cases aged 30 and over..			6·0

That gastric and intestinal polypi must both be regarded as precancerous lesions is obvious, but Table XX. shows that in the colon polypi bulk more largely in the picture.

TABLE XX.—*Frequency of Polypi as a Precancerous Lesion.*

—	Cases.	Associated with polypi.	Incidence (per cent.).
Carcinoma of stomach	322	15	4·7
,, colon	79	21	26·6

It is unusual to be able actually to demonstrate the onset of malignancy in a polypus. Miller, Eliason, and Wright (1930) did so in 8 out of 23 gastric polypi submitted to microscopic examination—35 per cent.; and Hullsiek (1930) in 6 out of 25 from the intestine—24 per cent. Malignancy may arise in more than one polyp, either at the same time or after an interval, and I have seen two cases in each of which two independent carcinomata of the colon coexisted with numerous simple polypi of the large gut. Cases of this kind have been reported by Abel (1929–30), Norbury (1930–31), and others. Dukes (1925–26) believes that with the development and progress of malignancy there is a tendency for the polypi to disappear.

HETEROTOPIC TUMOURS.

The occurrence of heterotopic nodules of pancreatic tissue in the walls of the stomach, duodenum, and small intestine, and in Meckel's diverticulum, is by no means infrequent. The closely related and similarly distributed lesion, adenomyoma (Stewart and Taylor, 1925), in which nodules of glandular tissue of mingled pancreatic, brunnerian, and duct type are interspersed with bundles of unstriped muscle, is less common, though still far from rare. There is no evidence that either of these lesions is particularly liable to malignant metamorphosis (Taylor 1927, Stewart 1929).

Lesions due to Animal Parasites.

For some years the idea has been gaining ground that there is an association between certain animal parasites and various forms of cancer of the alimentary tract. In a few instances the evidence for the association is conclusive, in others it is merely suggestive. In man the examples so far recorded belong to the latter category. With one or two unimportant exceptions, the parasites incriminated belong to the phylum vermes, classes nemathelminthes and platyhelminthes, orders nematoda, cestoda and trematoda; that is to say, various round worms, tapeworms—especially in the larval stage of their development—and flukes. The exact nature of the relationship between the parasite and a neoplastic type of response on the part of the host is still obscure, even where the association is beyond dispute, and it will be well to proceed warily in attempting to generalise from particular instances. Usually a chronic inflammatory or granulomatous lesion is the starting-point, and is followed either by a benign type of epithelial neoplasia, passing insensibly into epithelial malignancy, or by sarcomatous metamorphosis of the connective tissue barrier which surrounds the parasite.

COCCIDIOSIS.

Little need be said under this head. In the rabbit, both wild and domesticated, invasion of the bile-ducts by the protozoan parasite coccidium oviforme (*Eimeria stiedae*, Lindemann) is a common event. It leads to an extensive and prolific papillomatous overgrowth of the bile-duct epithelium, which, however, never assumes invasive properties, although it is interesting to note that Hake, who in 1839 was the first to describe it, believed that the lesion was cancerous. In man a few cases of invasion of the liver by a similar parasite have been reported. These have been critically reviewed by Dobell (1918–19), who is prepared to accept only three as real cases of human coccidiosis. There was no associated malignancy.

SPIROPTERA CANCER.

The work of Fibiger, of Copenhagen (1913, 1919, 1920, 1921, 1923), on spiroptera cancer of the stomach and tongue provides one of the most fascinating chapters in the history of cancer research. The whole of this truly epoch-making work arose out of the casual finding at autopsy of large papillomatous growths in the stomachs of three rats (from Dorpat) which had previously been injected with tubercle bacilli.

The tumours were squamous in type, having originated in the fundus, and there could be little doubt histologically that they were malignant. On further search the tumours were found to harbour a tiny nematode and its eggs, and the question arose whether or not this association was accidental. Fibiger thereupon examined a very large series of Danish rats, but failed to find either tumours or this particular parasite. It had previously been shown by Galeb (1878) that the cockroach *Periplaneta orientalis* was the intermediate host of a filaria which passed part of its life-cycle in the stomach of the rat, and a number of wild rats with this cockroach in their stomachs were examined, with negative results. Feeding experiments were also negative.

Rats from a sugar refinery where the cockroaches were of the species *Periplaneta americana* were then examined, some immediately they were caught, others after they had been kept until they died; 40 out of 61 were found to harbour the nematode in question, and in 18 of these the stomach was the seat of hyperplastic and neoplastic changes. Several well-controlled series of feeding experiments followed, and afforded complete proof of the causative relationship between parasite and new growth, the first authentic instance of experimentally induced cancer.

At the same time the exact life-cycle of the nematode, *Spiroptera neoplastica* (*Gongylonema neoplasticum*), was worked out. The adult worm inhabits the squamous epithelium of the cardiac portion of the stomach, tongue

and less frequently œsophagus of the rat. The eggs, passed per anum, are eaten by the cockroaches, and in them develop into free embryos which migrate to the striped muscles of the prothorax and extremities, and there become encysted. When infected cockroaches are eaten by the rat, the embryos are set free and penetrate into the wall of the stomach where they attain sexual maturity in about two months.

The parasite lies in the thickness of the epithelium, and the changes induced vary with the number present. If there are only a few, simple squamous epithelial thickening and slight inflammatory changes result; if many, enormous polypoidal growths project into the cavity. The proliferating epithelium also extends deeply into the wall of the stomach, in advanced cases penetrating even the muscular coat, while notable inflammatory and proliferative changes are seen in the stroma. True tumours appear in from six weeks to three months from the time of infection.

The incidence of carcinoma in animals which survive for six weeks or longer is high, fully 50 per cent., and the remainder invariably show the earlier inflammatory and benign neoplastic changes. Tiny metastatic deposits in the lungs were present in six out of 33 rats in which these organs were examined in serial section. One showed also a deposit visible to the naked eye in a retroperitoneal lymph gland. The metastases never contained worms, a fact of prime importance. Similar lesions were induced, but with greater difficulty in other rats (*M. rattus* and *M. decumanus*) and in white mice. Occasionally in the latter the epithelial hyperplasia and downward infiltration were not limited to the cardiac portion, but involved also the neighbouring pyloric part, where both adenopapillomata and epithelial downgrowths were seen.

In the tongue, buccal mucosa and œsophagus, local invasion by the worm was followed by the same inflammatory phenomena and benign epithelial hyperplasia. In seven rats a chronic desquamative glossitis was followed by the development of true carcinoma, which persisted and progressed even after the glossitis had been recovered from. The final proof that the lesion induced was truly cancerous was afforded by the result of grafting experiments. Fibiger, using a peritoneal metastasis from a mouse, was able to continue the grafts over four generations during one year, the transplants being free from both worms and eggs.

What is the relation between the worm and the cancer? Borrel (1906) has stated his belief that the parasite acts merely as a vector of some as yet undiscovered carcinogenic virus. Fibiger has pointed out, however, that the severity of the lesion during the first phase of infection is in direct accordance with the number of worms present. This is explainable more naturally as a toxic effect of the worms than as the result of an infection passively conveyed by them. Once the autonomous growth has been started it continues independently of the infestation, behaving in all respects like malignant disease in man.

Beatti (1922–23) has reported three cases and Bonne (1926) one case of carcinoma of the stomach in rats (*M. norvegicus*) associated with another nematode parasite *Hepaticola hepatica*. In two of Beatti's cases, sarcoma, papilloma, and carcinoma coexisted in the same stomach. Metastasis to liver and lymph glands in two cases demonstrated completely the malignancy of the epithelial tumours. Vogel (1929) has succeeded in inducing squamous carcinoma in the stomach of two out of four black and white rats, by feeding them with the ripe eggs of *Hepaticola gastrica*. He thinks that the parasite recovered by Beatti was also *H. gastrica*. Of interest in relation to the specificity of these carcinogenic agents is the observation of Eiken (1920), who discovered a cysticercus sarcoma of the liver and a spiroptera carcinoma of the stomach existing side by side in the same rat.

Have the observations and experiments of Fibiger and his associates any direct application to cancer in man? The answer is, very little. According to Sambon (1926) gongylonema has been observed as a human parasite in only five or possibly six cases, and Ewing (1928) states that he rather frequently finds trichinæ in cancerous tongues. I have had no personal experience of this association. Isolated cases in the human subject where trichinal infestation and carcinoma have coexisted have been reported by Timm (1864), v. Linstow (1868), Babes (1906), Babler (1908), and others, but statistical proof of any association between them is lacking.

CYSTICERCUS SARCOMA OF THE LIVER.

In 1906, Borrel reported the occurrence of sarcoma of the liver in a rat infested with *Cysticercus fasciolaris*, the larval stage of *Tænia crassicollis*, a tapeworm of the cat. The cyst, which contained a worm 20 cm. long, lay within the tumour, the malignant nature of which was proved by successful passage in series through three generations.

Further examples of the naturally occurring disease have since been reported by a number of observers. McCoy (1909), who examined 100,000 American wild rats *post mortem*, found 22 with primary tumours of the liver, 13 of which harboured the cysticercus. Bridré and Conseil (1909, 1910) had 10 instances of cysticercus sarcoma in 7770 North African wild rats, of which 2174 were infected with the parasite; Woolley and Wherry (1911–12), 3 in 23,000 American wild rats; and Bullock and Rohdenburg (1917), 3 in 4300 laboratory rats.

In recent years Bullock and Curtis (1920–21, 1924, 1925, 1926, 1928) have carried out extensive experimental studies of this interesting tumour. They found that rats could readily be infected with the cysticercus by feeding them on cat fæces containing the eggs of *Tænia crassicollis*, and that in from 20 to 50 per cent. of the infected animals sarcomatous tumours subsequently developed around the parasitic cysts in the liver. The growths originated from the reactive wall of mesoblastic tissue formed around the parasite, and there were all gradations from reactive proliferation through benign neoplasia to frank malignancy with metastasis. As a rule, sarcoma developed in relation to one cyst only, but in a number of instances there were tumours in the walls of two or more.

It is worthy of note that amongst 2100 rats with cysticercus tumours of the liver there was no instance of a straightforward carcinoma (Bullock and Curtis, 1928).

HYDATID DISEASE AND CANCER OF THE LIVER.

The only worm which passes the larval stage of its existence with any frequency in the human subject is the *Tænia ecchinococcus*. Even in this country it is met with not infrequently, in Leeds 32 times in 12,800 autopsies, or 0·25 per cent. Yet the association with carcinoma of the liver is extremely rare, and the occasional reported cases (Bamberg 1901, Dibbelt 1903, Necker 1905, Löhlein 1907, and Ziegler (three cases) 1927), may well be accidental. Fabris (1930) reports a case which he regards as a primary mesothelioma arising in peritoneum stimulated to proliferative activity by a subjacent hydatid of the liver.

URINARY SCHISTOSOMIASIS.

Of the three species of schistosoma which infest man on a large scale, one, *S. hæmatobium*, gives rise mainly to lesions of the urinary tract, the others, *S. mansoni* and *S. japonicum*, mainly to lesions of the rectum and colon. Pathological changes in the liver are produced by all three, but are more notable in mansoni and japonicum infections.

In the urinary tract an intimate association between schistosomiasis and carcinoma of the bladder has been shown to exist, at least in Egypt. The terminal-spined eggs of *S. hæmatobium*, in their passage from the radicals of the vesical veins into and through the wall of the bladder, set up a cystitis, which, in the absence of treatment, slowly progresses from a catarrhal to a granulomatous stage, and finally develops into true tumour formation.

The first report of carcinoma of the bladder in a patient infected with bilharzia would appear to date from 1888. On May 15th of that year, at

Pathological Society of London, Hurry Fenwick showed on behalf of Thomas Harris, of Manchester, half a bladder infected with bilharzia disease and in which microscopic examination confirmed the epitheliomatous character of a large tumour almost filling the interior. Ova were present in very large numbers in the base of the growth and in the surrounding mucosa and submucosa, but not within the tumour itself. It was stated that—

"The case appears to be interesting on account of the possible connexion of the malignant growth with the bilharzial affection. It is quite possible that malignant disease may have been occasioned by the irritation produced by the bilharzia ova, and that whilst usually the effect of the ova in the mucous membrane of the bladder is only to cause the production of an inflammatory granulomatous tissue, in this case the irritation had occasioned the development of an epithelioma."

In the same year Virchow (1888) mentions without special comment a case seen by him at autopsy in Lower Egypt where a carcinoma of the bladder was associated with the presence of bilharzia in the portal vein. Harrison (1889) in THE LANCET reported the result of a study of five bladders which had been sent him by Mackie, of Alexandria. All showed evidence of bilharzial infestation and four were carcinomatous. Harrison asks whether the parasite merely plays the part of an irritant in a person already predisposed to cancer, or whether the relationship is not even more intimate. Albarran and Bernard (1897), who examined one case, state their belief that irritation by the eggs is the determining cause of the cancer.

Kartulis (1898) reported nine instances of primary carcinoma of the bladder, and one of sarcoma in 300 cases of bilharziosis studied by him. Goebel (1905), from 1890 to 1901, at the Deaconess Hospital, Alexandria, found 89 cases of cancer of the bladder amongst 1684 patients with schistosomiasis (5·28 per cent.), and at the Greek Hospital 22 cases of bladder cancer in 113 cases of cancer of various organs (19·5 per cent.). In England and Wales (1910–12) the incidence of cancer of the bladder and urethra was only 3·09 per cent. of cancer in males (Young and Russell, 1926), while in the years 1924 to 1929 inclusive the rate for bladder cancer alone was 2·96 to 3·12 per cent. Ferguson (1911–12), in Cairo, encountered 39 cases—33 of carcinoma and 6 of sarcoma—in the course of 600 consecutive autopsies in males of 5 years of age and upwards. At least 40 per cent. of the 600 were infested with bilharzia, including 29 of the cases of bladder cancer. Dolbey and Mooro (1924) analysed 671 cases of malignant disease seen in four years at the Kasr-el-Ainy Hospital. Among them were 51 cases of cancer of the bladder—7·6 per cent. Confirmatory evidence is furnished by Hoffmann (1930). Amongst 991 cases of "cancer" admitted to Egyptian public hospitals during 1927–28 there were 186 cases of bladder cancer (18·8 per cent.) He compares this figure with the incidence in America in 1926—3·2 per cent. of all deaths from cancer.

Brumpt (1930) points out that the evidence for the association of schistosomiasis with vesical cancer comes only from Egypt, though not only from Egyptians, since Arabs living in Egypt are equally affected. This he attributes, probably rightly, to lack of careful observation in other bilharzia-infested countries.

INTESTINAL SCHISTOSOMIASIS.

A very different picture is presented by the intestinal forms of schistosomiasis. Here the lesions of rectum and colon stop short at the stages of granulomatosis and polypoid adenomata. It is not that there is any lack of irritation. The mucosa and submucosa of the large intestine, especially the sigmoid and rectum, become the seat of enormous accumulations of lateral-spined eggs, and a chronic inflammatory lesion is set up characterised in its later stages by the formation of localised or widespread adenopapillomata often of large size. "These do not appear to present any tendency to malignant development" (Dolbey and Mooro).

In Egypt, where infestation by *S. mansoni* is rife, cancer of the rectum is a rare disease. Ferguson saw only nine cases in three years, Dolbey and Mooro seven in 671 cases of cancer, or 1 per cent. In England and Wales in 1910–12 the incidence of cancer of the rectum was 10·71 per cent. of the total cancer incidence in males, the rest of the intestine (mainly the colon) providing an additional 10·12 per cent.

In Japan, a number of observers have reported the association of carcinoma of the rectum and colon with schistosomiasis japonica (Endo, 1908; Fukushima, 1914, &c.), and Kazama (1921) states that intestinal carcinoma occurs with greater frequency among the inhabitants of regions where schistosomiasis is endemic. He himself describes nine cases of intestinal carcinoma in which old parasitic eggs were found, especially between the malignant and healthy tissues. In the absence of more precise statistical information, however, little importance can be attached to these opinions, and it must be concluded that up to now there is no satisfactory evidence that intestinal schistosomiasis is ætiologically related to carcinoma of the rectum or colon. Madden (1907, 1919), who had an extensive surgical experience in Egypt, says that rarely bilharzial ulceration around the anus or on the glans penis may end in epithelioma. These are usually cases of long standing, with multiple sinuses or fistulæ and much scarring.

HEPATIC SCHISTOSOMIASIS.

The connexion between the three chief species of schistosoma and certain forms of cirrhosis of liver is well established. So far as Western countries are concerned, Symmers (1903–04) in Egypt was the first to draw attention to a peculiar form of periportal fibrosis associated with the presence of bilharzia ova. To the naked eye "the cut surface of the liver looks as if a number of white clay-pipe stems had been thrust at various angles through the organ." The eggs and egg shells present were those of *S. mansoni*. Long before this, however, Japanese observers had described the association of cirrhosis of the liver with the presence of a special parasite's eggs, although it was not until 1904 that Katsurada definitely established the causative agent as a new species of schistosoma (*S. japonicum*) (Faust and Meleney, 1924, *lit.*).

The cirrhotic lesion is by no means uniform in character. Stitt (1929), for example, speaks of "interlobular," and Day (1924) of "multilobular" cirrhosis, and there is considerable doubt as to how closely these resemble the ordinary types of the disease. Risquez (1919), who investigated the liver in 42 cases of *S. mansoni* infection at the Caracas Medical School, did not once observe the classical picture of the cirrhosis of Laennec. In 100 autopsies on Chinese, Oppenheim (1925) encountered 11 cases of schistosomiasis japonica. The liver was affected in all, being enlarged in some and small in others, with eggs often in enormous quantities. In one case a hobnailed liver presented appearances indistinguishable from those of ordinary atrophic cirrhosis. Day (1924), in Egypt, concludes that there are two types of cirrhosis, depending on the number and rate of deposition of ova. If, as is more usual, the numbers are small and deposited over a considerable period, the diffuse form of cirrhosis (multilobular) is set up; if very numerous they accumulate round the portal vessels, producing dense periportal (pipe-stem) cirrhosis.

There is also some difference of opinion as to how far the cirrhosis is due to the eggs and how far to toxins elaborated by the worm. Phalen and Nichols (1908) in a case of schistosomiasis japonica found the liver destruction and fibrosis far more than could be accounted for by the number of ova present, and apparently incline to the view that a toxin plays some part. Lambert (1928) regards the mere presence of the eggs of *S. mansoni* over a long period as sufficient explanation, and Fischer (1919) and Stitt (1929) take a similar view with regard to *S. japonicum* and *S. hæmatobium* respectively.

Fairley (1919–20), in his experimental work on monkeys, finds that in most of the organs and tissues where ova lodge there is a definite relationship between the production of macroscopic lesions and the quantitative distribution of the eggs. The possible exceptions are the lungs and liver, where toxins as well as ova are being filtered out. In view of the frequency with which liver changes were encountered

in the monkey, Ferguson and Fairley reinvestigated a quantity of human material from this point of view. They found that the human liver is much more constantly involved than had previously been supposed, and the fact that the changes are out of all proportion to the number of eggs present leads them to conclude that here also the generalised cirrhosis is the result of toxic action. These observations in man have been confirmed by Dew (1923).

It is when one endeavours to associate these changes with the development of primary carcinoma in the liver that the sequence of events breaks down. As already shown, there is a definite association between ordinary multilobular cirrhosis and primary hepatic cancer. Is there any evidence of a like association in bilharzial cirrhosis? The meagre data available are of two kinds:

(1) Direct evidence of the occurrence of primary cancer of the liver in cases of schistosomiasis; and

(2) Evidence of a high incidence-rate of hepatic cancer in districts where bilharzial infestation is prevalent. So far as the first is concerned, for the most part only a few isolated cases have been reported. In the Far East, Kusama (1907), Yamagiva (1911), and others have noted the association of the two diseases, and Mouchet and Fronville (1918) have reported a case from the Belgian Congo. Mouchet and Gerard (1919), however, in reporting five additional cases of primary hepatic cancer, do not make any mention of schistosomiasis.

Harvey Pirie (1921–22) has presented the strongest evidence so far available. In 36 cases of primary carcinoma of the liver examined by him in the South African Institute for Medical Research, 31 out of 33 in which the necessary information was available showed cirrhosis of the liver. Actual proof of the presence of schistosomiasis was established in ten, five of which occurred in the last seven cases, after attention had been directed to the point. Pirie emphasises the fact that in 24 of the 26 negative cases no information as to the state of the bladder was available. These findings are suggestive though by no means conclusive, and Dr. Pirie informs me (1930) that his own subsequent experience has failed to substantiate the views put forward tentatively in this paper.

So far as the incidence of primary cancer of the liver in bilharzia-infested countries is concerned, there is insufficient evidence on which to base conclusions. MacVicar (1925) attributes the high frequency of liver cancer in South Africa to schistosome infection, but his figures are inadequate. In Egypt the evidence so far as it goes is against any association.

DISTOMIASIS AND BILIARY CARCINOMA.

Of the various species of liver-fluke which have been encountered in man two, *Opisthorchis felineus* and *Clonorchis sinensis*, have had a definitely carcinogenic rôle assigned to them by many observers. In general, the presence of flukes in the biliary passages gives rise to changes which have been classified by Brumpt (1927) as due to (1) destructive, (2) mechanical, (3) irritative, and (4) toxic action.

The changes induced in the walls of the bile ducts are of a chronic inflammatory and proliferative nature, the extent and severity of which are directly dependent on the heaviness of the infestation. The large and medium-sized ducts become much dilated and contain not only the parasite but also its eggs, and varying numbers of leucocytes and desquamated epithelial cells. The number of flukes in a severely infested case may be enormous, running into thousands. The inflammatory changes consist of a slowly progressive fibrosis of the outer walls of the ducts, with much lymphocytic and eosinophilic infiltration. Extension of the fibrosis into the surrounding paranchyma is described (Ruditzky, 1928), but is limited in extent and does not give rise to a true portal cirrhosis. The epithelial lining may be destroyed, or it may proliferate actively, growing into the dilated lumen in the form of adenopapillomatous masses often visible to the naked eye. Active proliferation also takes place in the mucous glands of the larger ducts, so that the channel comes to be lined by an adenomatous layer of varying thickness. Ordinarily these proliferative changes are confined within the densely sclerotic zone already mentioned, but there is evidence to show that occasionally an infiltrative malignant neoplastic change may be initiated. Full statistical and experimental proof is lacking, but the observations already made are at least suggestive.

The geographical distribution of the flukes concerned is important. *Opisthorchis felineus*, first discovered as a human parasite by Winogradoff (1892) in Siberia, is now known to occur also in East Prussia (Askanazy, 1900), Russia (Ruditzky, 1928), and other European countries, and occasionally in India, China, and Indo-China (Faust, 1930). *Clonorchis sinensis* occurs endemically in China (except the North West), Korea, and Japan. The chief natural reservoirs of both parasites are the dog and cat, and both are acquired by man by the ingestion of certain fish, one of the intermediate hosts, in a raw or insufficiently cooked state (Olpp 1928, Hoogland 1929, Faust 1930). Only scanty figures are available of the incidence of infestation in the populations at risk.

Romanoff (1907) saw in the post-mortem room at Tomsk 106 cases of distomiasis in 14 years. Two had carcinoma of the head of the pancreas. According to Winogradoff, the incidence of *Opisthorchis* in Tomsk was 6·45 per cent. Scriabin and Schulz (1928) state that in all only 149 cases of opisthorchis infestation have been reported in the U.S.S.R., and only 43 in other countries. In Japan, the most heavily infested province is Okayama, where Katsurada (1900) found from 56 to 67 per cent. of the inhabitants infected with *Clonorchis sinensis*.

Statistics for the frequency of carcinoma of the liver and bile passages in the infested and non-infested populations respectively can hardly be said to exist. The only figures which I have found are those of Oldt (1927) from Canton. In 287 patients infested with *clonorchis* there were three with (? clinical) cancer of the liver (1·045 per cent.), as compared with five cases amongst 1461 patients without *clonorchis* (0·342 per cent.), a difference which is not statistically significant. The incidence of primary carcinoma of the liver appears to vary greatly in different parts of China, and it has been suggested, although statistical evidence is lacking, that the areas of high incidence correspond roughly with those of *clonorchis* infestation (Maxwell, 1929).

The literature of this subject consists almost wholly of isolated case-reports of carcinoma of the liver, larger bile-ducts, or pancreas occurring in persons infected with one or other of the flukes in question.

Cases associated with *Opisthorchis felineus* have been reported by Askanazy (1900, 1904, 1909), Romanoff (1907), Rindfleisch (1910), Ssavinych (1927), and Ruditzky (1928); and with *Clonorchis sinensis* by Katsurada (1900), Yamagiwa (1908), Fuzii (1912), Watanabe (1912), Tsukioka (1912), Watson-Wemyss (1919), and Bentham (1920) (the same case), Porter and Pirie (1921–22), Oldt (1927), Nauck and Liang (1928), and Kabeshima (1927).

Hoogland (1929) has produced important evidence in support of the view that distomiasis and carcinoma of the biliary tract are ætiologically related. In Holland cats are not infrequently fluke-infested, presumably because they are fed on uncooked fish. In four such cases he found the distomiasis associated with carcinoma of bile-duct origin, and in a fifth case with primary cancer of the gall-bladder. One must conclude therefore that while complete proof is lacking, sufficient evidence is available to establish a strong *a priori* case for a relationship between the two conditions, and we may reasonably regard as a probable precancerous lesion the benign proliferative changes in the bile passages which result from the presence in large numbers of these parasitic flukes.

Summary and Conclusions.

It is clear from what has been said that the precancerous conditions of the alimentary tract are both numerous and varied, though not all of equal importance. In the mouth, leucoplakia of the

tongue stands out as the chief precancerous lesion, being present in at least one-third of cases of cancer of that organ. It is interesting to notice that whereas about two-thirds of the cases of leucoplakia linguæ are syphilitic in origin, leucoplakia vulvæ, also an important precursor of cancer, bears no relationship to syphilis but depends in part at least on the cessation of ovarian function.

In the stomach, chronic gastric ulcer is probably responsible for about one-sixth of the cases of cancer, while simple adenomatous polypi account for another 4 or 5 per cent. The connexion between chronic gastritis and cancer is not yet clearly established, although there is a certain amount of evidence, both clinical and pathological, pointing in this direction. Following Hurst, the anatomical distribution of carcinoma of the stomach would suggest that mechanical friction is an important factor in the ætiology of this disease.

In the liver, multilobular (portal) cirrhosis is the usual precursor of primary cancer. Nine out of ten liver-cell carcinomas originate in cirrhotic organs, often with the formation of multiple adenomata as an intermediate phase, while the less common bile-duct cancer is associated with cirrhosis in about half the cases. In hæmochromatosis with its accompanying cirrhosis the chances of carcinoma arising in the liver are at least as high as in the ordinary multilobular type.

The association between cholelithiasis, cholecystitis, and cancer of the gall-bladder and larger bile-ducts is fully established. Figures are given to show that it is the multiple facetted type of stone which is responsible and not the solitary cholesterol stone, which does not occur with significantly greater frequency in cases of biliary tract cancer than in the control series.

The chief precancerous lesion of the large intestine is the benign adenomatous polypus, and, as a subvariety, the rare condition known as familial polyposis. There is no evidence that either diverticulosis or diverticulitis is ætiologically related to cancer, but it is shown that the carcinoid tumour of the appendix arises with greater frequency in the fibrosed and (partially) obliterated organ.

There is but scanty evidence in man of a connexion between animal parasites and cancer of the alimentary tract. Fibiger's work on spiroptera cancer of the stomach in rats and Bullock and Curtis's investigations on cysticercus sarcoma of the liver in the same animal have no direct applicability to the human subject. A number of examples of primary carcinoma of the liver and bile passages occurring in association with infestation by flukes have been reported, mainly from Russia and the Far East, and an *a priori* case may be regarded as having been established. Schistosomiasis, certainly the chief cause of the high incidence of carcinoma of the bladder in Egypt, is ætiologically unrelated to either carcinoma of the liver or carcinoma of the large intestine.

LOCAL FACTORS IN CARCINOGENESIS.

A general conclusion which may reasonably be drawn from these varied observations is the desirability of stressing the importance of local factors in the ætiology of malignant disease. At present this constitutes much the most fruitful field of inquiry, and the most hopeful line of attack in cancer prophylaxis. So far as the alimentary tract is concerned the opportunities for the prevention and treatment of precancerous states are fewer than in the case of external cancer, where the ætiological relationship with various sources of irritation is now well established, but even here something can be done.

The study of the racial and geographical incidence of malignant disease, not in general but in respect of particular sites, is still in its infancy. From the little that has already been done it is clear that much may be learnt from a detailed study of the environmental factors, climatic, dietetic, habitudinal, parasitic, of the races of mankind. For this purpose accurate statistical information on a large scale, as yet unavailable, is an essential prerequisite.

I would conclude by emphasising the extraordinary width and diversity of the field of cancer research, including as it does the nature, causation, prevention, and treatment of the numerous and varied precancerous states of which I have spoken, and many more besides. No one who takes up cancer research should feel that he is committed to a narrow specialty: it is a field of almost illimitable scope, and incidentally a splendid training ground for both pathologist and clinician.

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NON-PARASITIC CYSTS OF THE LIVER.

A REPORT OF TWO CASES TOGETHER WITH A CASE OF CYST OF THE LIGAMENTUM TERES HEPATIS.

BY CECIL P. G. WAKELEY, F.R.C.S. ENG., F.R.S. EDIN.,

SURGEON TO KING'S COLLEGE HOSPITAL AND THE BELGRAVE HOSPITAL FOR CHILDREN; CONSULTING SURGEON TO THE MAUDSLEY AND HAMMERSMITH HOSPITALS;

AND

D. J. MACMYN, M.B. CAMB.,

SAMBROOKE SURGICAL REGISTRAR, KING'S COLLEGE HOSPITAL.

ALTHOUGH many cases of non-parasitic cysts of the liver have been recorded, the condition is comparatively rare. These cysts are more frequently found in the post-mortem room than in the operating theatre, as they rarely give rise to symptoms requiring surgical interference during life.

According to a recent report by Ackman and Rhea,[1] the total number of recorded cases operated upon is 77. They refer to the figures published by Muto and Hanzanda,[2] in 1930, but Stoesser,[3] in 1929, states that 102 cases which were surgically treated had been recorded; to these he added two of his own.

Two cases are here recorded, and a third case of similar, but not identical, nature is added, because it may possibly throw some light on the ætiology of a certain type of these liver cysts.

Case Records.

CASE 1.—A stoker petty officer in the Navy, aged 40, was admitted to the Royal Naval Hospital, South Queensferry, on May 5th, 1916, with a diagnosis of acute cholecystitis. He had suffered from intermittent dyspepsia for some 20 years, but this was thought to be due primarily to infected teeth; these were removed, and double dentures fitted. However, the dyspepsia still persisted, and was thought to be aggravated by working in a very warm atmosphere. Although his appetite was always poor, he was a well-built man, weighing some 15 stone. He had complained of pain in his right shoulder for several years past, but had been told that this was due to rheumatism. He had never had any fever, nor had he vomited, although he frequently complained of nausea.

Two days before admission, while drying himself after a bath, he noticed a lump in his belly, just above his navel. This worried him a good deal, and he reported sick and was sent ashore to hospital.

Examination.—He was a somewhat obese man, 5 feet 2 inches in height. There was no sign of jaundice, and his tongue was clean. Temperature, pulse, and respiration were normal. The abdomen was rather full, and the anterior abdominal wall had a thick covering of subcutaneous fat. Nothing abnormal could be seen on inspection, but a very distinct lump, just below the ninth left costal margin, could be palpated. It was about the size of an orange, and was attached to the liver. The liver itself did not appear to be enlarged. The lump felt solid and smooth (Fig. 1), and it could not be moved independently of the liver. It was painful on deep palpation.

The question of the possibility of a hydatid cyst was raised. An examination of the patient's blood revealed: red blood corpuscles, 5,200,000 per c.cm.; white blood corpuscles, 6340; Wassermann reaction negative.

The diagnosis of cholecystitis seemed most unlikely, as the swelling was well to the left of the mid-line, whereas an enlarged gall-bladder, as a rule, passes downwards towards the umbilicus, being directed thither by the round ligament. A diagnosis of hepatic tumour was made, and the patient advised to have an exploratory laparotomy.

Operation.—On May 5th a mid-line supra-umbilical incision was made, and the peritoneal cavity opened under

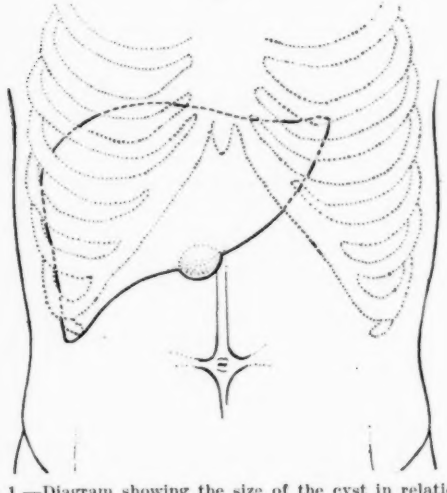
open ether anæsthesia. The tumour proved to be an isolated unilocular cyst of the left lobe of the liver. No adhesions to other structures were found. The gall-bladder was situated in its normal position, did not appear to be pathological, and contained no stones. The cyst appeared to extend rather deeply into the substance of the liver. The interval between the cyst and liver substance was sought for, incised with a knife, and, by gentle gauze dissection, the cyst was gradually shelled out of the left lobe of the liver. Bleeding was not excessive, and a large cigarette drain was placed upon the raw surface of the inferior aspect of the liver. Two interrupted catgut sutures were used to approximate the edges of the liver over the drainage-tube. The abdomen was then closed. Convalescence was normal; the drainage-tube was shortened on the second day and removed on the fourth; the stitches were removed on the ninth day. The patient was discharged to Chatham three weeks after the operation.

The cyst was about the size of a large orange, and contained 12 ounces of sterile, slightly blood-stained fluid containing some cholesterol crystals. No scolices or hooklets were seen. The lining membrane of the cyst was quite smooth. A portion of the cyst wall was sent to King's College Hospital, to the late Dr. W. d'E. Emery, who reported that it was made up of connective tissue in which a few bile-ducts could be seen; he considered that the cyst had originated primarily in a dilated bile-duct.

In 1925 the man was pensioned from the Navy, and wrote to one of us (C. P. G. W.) saying that he was sailing for Canada, was in the best of health, and had never had any indigestion since his operation ten years previously.

CASE 2.—A woman, aged 51, was admitted to King's College Hospital on March 11th, 1931, complaining of a "lump in her stomach" and abdominal pain. For about a year previously she had noticed

FIG. 1.

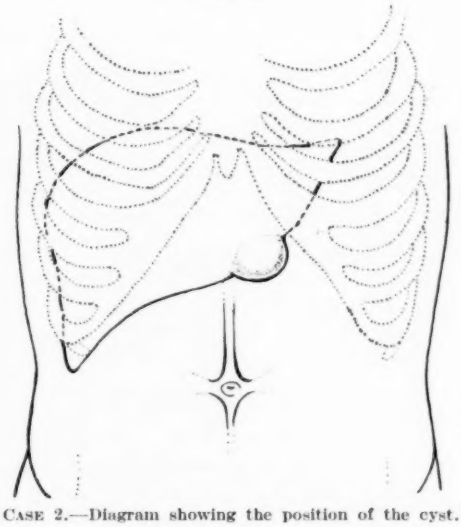


CASE 1.—Diagram showing the size of the cyst in relation to the liver.

a round lump in her abdomen in the subcostal angle. It caused her no discomfort, and she paid no attention to it. Three months before coming she had had a sudden attack of abdominal pain accompanied by vomiting. This attack had been of short duration, and had been succeeded at irregular intervals by attacks of dull aching pain in the epigastrium, made worse by walking. The pain had no relation to food. Occasionally there were shooting pains in the back. She had suffered for over a year from vague dyspeptic symptoms, such as flatulence, loss of appetite, and occasional nausea. She had never been jaundiced, nor was there any loss of weight.

Examination.—On admission the patient looked healthy, and felt quite well. Her temperature and pulse-rate were normal. Her tongue was slightly furred, and some of her teeth were carious. A firm spherical lump could be felt in the epigastrium slightly to the left of the mid-line and

FIG. 2.



CASE 2.—Diagram showing the position of the cyst.

lying deeply to the rectus abdominis muscle (Fig. 2). It was about the size and shape of a tangerine orange, had a smooth surface, and gave a dull note on percussion. It moved vertically on respiration, and could be displaced easily from side to side. When pushed under the right costal margin, it could only be dislodged again with difficulty; this movement caused pain. Its lower rounded margins were well defined, but its upper margins faded away. It was thought to be attached to the liver. No abnormality was found in her other systems. The van den Bergh test gave a delayed direct reaction; quantitative 0·75 unit.

Operation.—On March 18th a laparotomy was performed (C. P. G. W.) through a right upper paramedian incision under open ether anæsthesia. A large thin-walled cyst was found projecting from below the anterior border of the left lobe of the liver (Fig. 3). It lay about 2 inches medial to the fundus of the gall bladder, immediately to the left of the ligamentum teres. It was bluish-black in colour, and was moderately distended with fluid. By careful dissection with gauze, aided by a few touches with the knife, the cyst was fairly easily shelled out from the liver, and preserved intact (Fig. 4). The operation caused only a slight oozing of blood. The gall-bladder was normal in colour and appearance, and contained no stones. No other abnormality was discovered in the abdomen. The raw surfaces of the liver were approximated with a few catgut sutures, and a drainage-tube left in situ.

From the cyst, which weighed 4 ounces, 80 c.cm. of a yellowish-brown turbid fluid were withdrawn by a cannula. No sugar or bile was present. Microscopically, a few red blood corpuscles and a fair amount of granular debris were seen. The fluid contained no cholesterin crystals, leucocytes, or parasites. No organisms could be found in direct smears, and all the cultures were sterile. Section of the wall of the cyst showed that it was composed of fibrous tissue, lined by a single layer of flattened epithelial cells. A few capillaries were seen in the fibrous tissue.

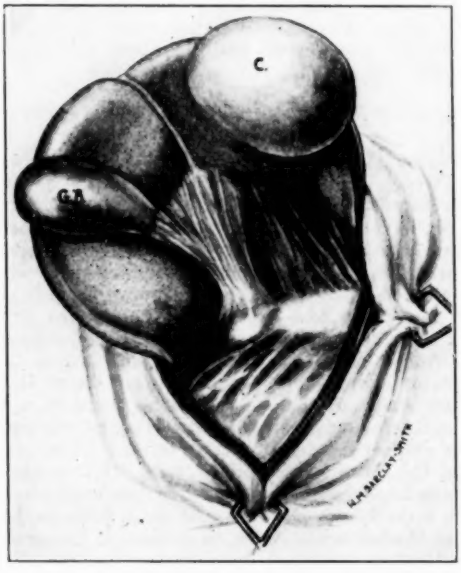
The patient made an excellent recovery, and was discharged 14 days later, free from symptoms.

CASE 3.—A woman, aged 54, was admitted to King's College Hospital under the care of Dr. C. E. Newman on Nov. 12th, 1930, complaining of indigestion. She had suffered from indigestion and headache for many years. Four months previously she had first noticed a lump in the upper part of the abdomen.

She had observed no change in its size, but thought it dropped when she was standing, and moved upwards when she lay down. A few days before admission she had had a particularly severe attack of headache and abdominal pain, accompanied by nausea and flatulence, but no vomiting. She described the pain as a dull ache. It was not localised, but seemed to spread across the epigastrium. It was worse on standing, and a belt which she was in the habit of wearing tended to increase her discomfort. She suffered from habitual constipation. She had suffered from a cyst of the neck, which was removed at another hospital 34 years before, and the nature of which is unknown. Nothing else of relevance in her past or family history could be elicited.

Examination.—The patient was normal in size and weight. She was not jaundiced, and looked fairly well. A small lump situated in the pyloric plane just to the right of the mid-line was noticeable. It was more apparent on deep inspiration,

FIG. 3.



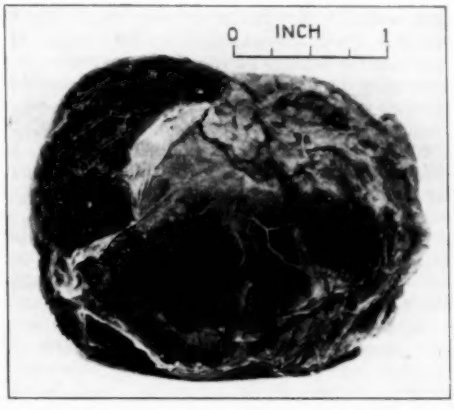
Drawing made at the time of the operation, showing the cyst on the inferior surface of the liver and its relation to the gall-bladder.

and could be felt lying fairly close to the anterior abdominal wall. It was about the size of a golf-ball, with a smooth surface and rounded margins, and was only slightly movable. It appeared to be fixed to the liver, which was enlarged to two finger-breadths below the ribs at the level of the ninth costal margin.

Nothing abnormal was found in the other systems. The Wassermann reaction was negative. The report of a barium meal was as follows: "Some ptosis of the stomach. The duodenal cap fills well and is not tender; in two films, the outer border of the cap is concave, possibly due to external pressure (Fig. 5)." A cholecystogram showed a ptosed gall-bladder; no gall-stones were seen. Red blood-cells numbered 4,060,000 and leucocytes 4000, and the hæmoglobin was 80 per cent.; no abnormal forms of cell were seen. A gastric residuum examination (Nov. 20th) gave a normal result, with the exception of a diminution of the normal amount of free hydrochloric acid. A provisional diagnosis of visceroptosis with adhesions was made. The nature of the lump was a matter of speculation. Laparotomy was decided upon.

Operation.—On Dec. 10th the abdomen was opened by a right upper paramedian incision under ether anæsthesia (C. P. G. W.). A small thin-walled cyst immediately came into view. It occupied the upper or hepatic end of the ligamentum teres, and appeared to be "sitting on top of" the right lobe of the liver at its medial margin, at the point where the ligamentum teres becomes anatomically continuous with the falciform ligament. It was not directly attached to the liver. In front it was adherent to the posterior sheath of the rectus muscle, from which it had to be separated. The cyst was easily removed intact. Some

FIG. 4.



Specimen of cyst after removal.

adhesions between the liver and the duodenum were divided. No further abnormality was detected in any of the viscera. The wound was closed without drainage.

Chemical analysis of the contents of the cyst showed that the fluid was alkaline to litmus, and contained a trace of albumin and of urea, but no sugar, pseudomucin, or bile. The wall was fibrous, containing some smooth muscle tissue, and had a definite endothelial lining. A little striated muscle tissue was found, but did not appear to be an integral part of the cyst wall.

The patient made an uninterrupted recovery, and was discharged free from symptoms 18 days later.

FIG. 5.

CASE 3.—Radiogram showing deformity of duodenal cap due to external pressure from the cyst.

Comment.

Cases 1 and 2 are examples of hepatic cysts which gave rise to symptoms, and were completely relieved by operation. Case 3 presented a similar clinical picture, although the cyst was apparently not of hepatic origin. It was likewise benefited by operation.

CLASSIFICATION OF NON-PARASITIC CYSTS OF THE LIVER.

In 1905, Bland-Sutton [4] divided these cysts broadly into two classes: general cystic disease and solitary cysts. In his detailed and exhaustive paper on the subject in 1913, Boyd [5] adheres to this classification, although both he and Sonntag [6] incline to the belief that general cystic disease and solitary cysts of the liver are manifestations of the same disease. A cyst is occasionally removed in the belief that it is solitary, but careful examination—either naked-eye or with the microscope—in small portions of excised liver-tissue reveals the presence of other cysts. Boyd pointed out that in general cystic disease many cysts varying greatly in size may be found in the liver associated with cystic disease of other organs, such as the kidneys, pancreas, spleen, brain, and lungs. On the other hand, the liver may be the only organ affected. According to Moschcowitz,[7] in a series of 85 recorded cases of general cystic disease, the liver alone was involved in ten. It is interesting to note that the association of cystic kidneys with cystic degeneration of the liver was first observed by Bristow [8] in 1856. It is generally held, however, that solitary cysts constitute a distinct pathological entity, and their greater clinical interest lies in the fact that they are usually amenable to surgical treatment while general cystic disease is not.

A more complete classification which embraces all types of non-parasitic cysts is suggested by Jones [9]: (1) Bile-duct retention cysts; (2) cystic degeneration of the liver with (usually) cystic kidneys; (3) teratomatous cysts; (4) lymphatic cysts; (5) cysts originating from blood-vessels; (6) ciliated epithelial cysts; (7) cystadenomata; (8) pseudo-cysts (degeneration cysts).

The first group appears to be the most common. Although it is possible that the two cases we have described belong to this group, nevertheless we consider that they may have had a different origin. The wall of the cyst of the bile-duct retention type is lined by epithelium of the same type as that lining a normal bile-duct. It may be modified, however, by the size and degree of distension of the cyst, or by inflammatory changes. Thus the single cyst seems to be derived in most cases from an aberrant bile-duct in which occlusion of the lumen has occurred as the result of faulty development, or by some intra-uterine or neoplastic process. According to Jones, the epithelium in the embryonic state is possibly of the secreting type, and the fluid secreted thereby becomes pent up, and subsequently causes distension of an imperfectly developed bile-channel. The theories which have been put forward to explain the origin of general cystic disease, as affecting the liver, have been adequately discussed by Boyd and other writers. The exact mode of origin of this condition, as well as that of solitary cysts of the liver, still remains open to speculation. Teratomatous, lymphatic, and cysts of blood-vessel origin—e.g., hæmangiomatous cysts, an interesting example of which was reported by Lowenburg [10]—require no discussion here.

Ciliated epithelial cysts are excessively rare, but Alexander [11] suggests that they may give a clue to the origin of certain cysts of which the pathology is doubtful. He states that the ciliated epithelium lining the cysts is identical with that which is found lining dermoid cysts, and with that of cysts connected with the upper air and food passages which are derived from the primitive fore-gut. The presence of the epithelium would seem to be a strong argument in favour of the developmental origin of the cysts, the epithelium in some cases undergoing a retrogression in type and becoming cubical or flattened.

The remaining two groups, cystadenomata and pseudo-cysts, represent the cysts which have an acquired origin, in contradistinction to the groups previously mentioned, of which the origin is almost certainly congenital. The term "pseudo-cysts" includes those cases of carcinoma and sarcoma in which cystic degeneration has occurred, of softening of cirrhotic nodes, and of cysts due to hæmorrhage resulting from trauma. In this group it is probably correct to include a striking case of Stevens's,[13] described as a "large cystic tumour of the liver simulating an ovarian cyst." The patient was a woman, aged 52, whose only complaint was an enlargement of the abdomen. A tumour about the size of a 28 weeks' pregnancy was felt, and was thought to be a multilocular ovarian cyst. At the operation, the only connexions of the cystic tumour were with the left lobe of the liver and with the anterior surface of the omentum. The pelvic organs were normal. Microscopically the tumour was a spindle-celled sarcoma. Whether it had grown from the hepatic capsule or had acquired a secondary attachment to it could not be determined.

SUGGESTED MODE OF ORIGIN OF A CERTAIN TYPE OF HEPATIC CYST.

An ætiological factor which, as far as we are aware, has not been described is suggested by Case 3. This case is noteworthy on account of its apparent rarity, since we have succeeded in finding only one recorded instance of a cyst of the ligamentum teres hepatis. This was the case reported by Henderson,[14] which was operated on by W. J. Mayo. It was the only case of its kind that had been met with at the Mayo Clinic. Henderson could find no published reference to a similar condition. It is known that a large number of solitary non-parasitic cysts occur at the anterior border of the liver near the junction of the right and left lobes. In this area is found the round fibrous cord or ligamentum teres of the adult, representing the fœtal left umbilical vein. This structure normally becomes obliterated when the adult circulation is established, but it would seem reasonable to suppose that in a few cases, as in Case 3, the process of obliteration remained incomplete. A local failure of closure may thus account for the formation of a cyst, especially when it is recognised that endothelial cells are in certain circumstances capable of producing a secretion, and that cystic formation is notoriously common in the adult remnants of similar fœtal structures, such as the round ligaments of the uterus, and the funicular portion of the processus vaginalis.

The resemblance of this cyst of the ligamentum teres to the solitary non-parasitic unilocular cysts of Cases 1 and 2, and to similar cysts described by various authors, is very striking when one compares the naked-eye appearances, the histology of the cyst wall, and the character of the fluid contents. Some considerable variation, it is true, may be noted in this last respect, for the constituents may be readily altered by superadded pathological processes, but the presence of albumin and the absence of sugar and bile is almost constant. It is often extremely difficult, if not impossible, to determine the nature of the single layer of flattened cells lining the cyst wall. In some cases it is epithelial, in some it is endothelial, but in others, where the cell-layer has become disorganised by long-standing pressure changes, inflammation, or trauma before and after removal of the cyst, even an expert histologist will

hesitate to hazard a definite opinion. We surmise that in many instances the lining layer has been incorrectly described as composed of epithelial rather than of endothelial cells. It is, however, in those cases of solitary thin-walled unilocular cysts where the cells of the lining layer are endothelial in type, that we suggest an origin from an abnormal ligamentum teres. Furthermore, if a cyst of the ligamentum teres should occur near the hepatic end it may easily acquire a connexion with the hepatic capsule, and subsequently obtain a "false" capsule composed of flattened-out liver tissue.

In Cases 1 and 2 the cysts were situated very close to the site which would be occupied by a cyst developing in the upper end of the ligamentum teres. In the former case it was immediately to the right, and in the latter case it was immediately to the left of the "insertion" of the ligamentum teres. Both cysts projected below the anterior border of the liver. Additional support is given to this idea of the origin of this type of cyst by the fact that they are so easily shelled out from the liver substance in which they are partly embedded. It seems likely that the line of demarcation, as represented by the fibrous wall of the cyst, would be less well defined if such cysts arose primarily from the liver, and that the process of extrusion would be much more difficult to accomplish. The outstanding features found at operation on the cysts under discussion were their mobility, their slender attachment to the liver, and the ease with which they were enucleated by gentle gauze dissection.

CLINICAL FEATURES AND DIAGNOSIS OF SOLITARY CYSTS.

Sex.—Females are affected far more commonly than males, the proportion being about 4 to 1. This preponderance of the condition in the female sex is in agreement with the fact that developmental defects are considered to be more common in that sex. Bland-Sutton,[15] however, in attributing certain cases to the effects of trauma, thought that the greater frequency in females was possibly associated with the pressure of corsets.

Age.—The average age of patients who have been operated upon is between 40 and 60. Several cases, however, have been recorded of operations performed upon infants (Stoesser, Shaw, and Elting[16]), and in patients over 70.

Size and situation.—The cysts vary considerably in size. Occasionally, they have been so enormous in the fœtus as to prevent normal delivery, as in the cases reported by Bagot,[17] and Cousins.[18] Cysts smaller than a walnut or an egg rarely require operative interference. They appear to arise from the right lobe of the liver more frequently than from the left in the proportion of 8 to 6 (Sonntag). This relative frequency may admit of a simple explanation, owing to the large size of the right lobe as compared with the left.

Symptoms and diagnosis.—The majority of cases give rise to no symptoms. This is shown by the number of cases found at autopsy, as in the series of Ackman and Rhea, who found ten cases in 6141 post-mortems in which "no symptoms referable to the liver, gall-bladder, or gastro-intestinal tract had been present during life." The symptoms which require surgical intervention for their relief arise from the mechanical effects of pressure due to the size and situation of the cyst, and to complications occurring in the cyst itself. Pressure upon some part of the gastro-intestinal tract may give rise to vague discomfort, sometimes amounting to pain, especially when there is gastric distension, nausea, flatulence, loss of appetite, headache, and vomiting. The bowel action may be irregular; constipation or diarrhœa is usually present, or they may alternate. Jaundice, usually slight and of an intermittent type, is occasionally present, and is due to obstruction of the extra-hepatic ducts. Pressure upon the costal vein may give rise to ascites. An abdominal swelling may be observed in some cases. This may occupy the epigastrium, to the right or left of the mid-line, or may spread over to the hypochondrium on either side, or even the whole abdominal cavity is occasionally involved. A characteristic feature, and one of diagnostic value, is the low tension of the cyst as compared with the tension of an echinococcus cyst (Kilvington[19]). The absence of a hydatid thrill is of no diagnostic value, as it is so rarely obtained by experimental observation.

The conditions which have been suspected before operation are varied in the extreme, and indicate the difficulty of a differential diagnosis. The list includes parasitic cysts and other cystic tumours of the liver and adjacent organs, such as the pancreas, kidney, and ovary; cystic dilatation of the common bile-duct; hydrops of the gall-bladder, tuberculous peritonitis, and solid tumours of the liver and kidney. An important observation regarding the differential diagnosis of a large liver or kidney tumour is made by Hoffman,[20] quoted by Stoesser. He pointed out that in large tumours of the liver the colon is pushed downwards and to the left, while in the case of a large tumour of the kidney, the colon lies in front of the swelling. This fact may be confirmed by X rays after colonic injection of air.

It should be emphasised that there are no constant clinical features of solitary non-parasitic cysts of the liver which enable a certain diagnosis to be made before operation. In the absence of a palpable swelling, a clinical picture suggesting cholecystitis, hepatitis, or chronic dyspepsia may be produced.

Certain complications arising in the cysts themselves may be mentioned. They are hæmorrhage (Kilvington), producing a sudden onset of acute symptoms or—in cases where the cyst is attached to the liver by a long pedicle—torsion and strangulation (Orr and Thurston).

TREATMENT.

When the nature of the attachment of the cyst to the liver permits, the choice of treatment is limited to complete excision. In some cases the cyst is so large or is so closely incorporated in the liver substance that total removal is impossible or dangerous. The surgeon must then be content with partial removal of the wall of the cyst, together with evacuation of the cyst contents by drainage or marsupialisation. In some cases where drainage has been used, suppuration and sinus-formation have ensued. Gauze-packing has been employed with success. Simple puncture is not to be recommended, as fatal peritonitis from subsequent suppuration may result. This complication occurred in two cases quoted by Jones. An original method of treating a large thick-walled cyst was adopted by Burghard in a patient who suffered from recurrent jaundice, reported by Everidge.[22] The cyst was anastomosed to the duodenum, with an entirely successful result.

Large cystic tumours in children must be treated with special care, for the rapid evacuation or removal of large cysts with consequent alteration in the intra-abdominal pressure has resulted in severe shock and death. This fatality appeared to be the direct

result of sudden abdominal decompression, as occurred in the cases reported by Shaw and Alexander.

Summary.

(1) Two cases of unilocular solitary non-parasitic cysts of the liver, and a case of cyst of the ligamentum teres hepatis are recorded. (2) The ætiology of solitary non-parasitic cysts of the liver is discussed. (3) A mode of origin, not previously described, of a certain type of unilocular hepatic cysts is suggested. (4) The clinical features are discussed, and the conclusion is arrived at, that pre-operative diagnosis is impossible in most cases. (5) The condition gives rise to so few, if any, symptoms, that it usually remains unrecognised during life. (6) Symptoms which occur are due to the effects of pressure upon neighbouring viscera or to complications arising within the cysts themselves. (7) Surgical intervention is recommended for the relief of symptoms. The best results are obtained in simple, uncomplicated cases, by complete excision.

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OPERATIVE TREATMENT OF HYDROCELE.

BY A. W. MOORO, M.CH. CAIRO, F.R.C.S. ENG.,
SURGEON TO KASR-EL-AINI HOSPITAL, CAIRO.

THE so-called idiopathic hydrocele of the tunica vaginalis is very common in Egypt. No less than five cases a day come to the Kasr-el-Aini surgical out-patient department, and 170 are operated on as in-patients every year. The vast majority of these cases are chronic and have had several previous tappings. The tunica is usually very thickened and sometimes very vascular. In fact, the tunica may be so thick that it is not possible to differentiate between hydro- and hæmato-cele by transillumination.

In spite of the prevalence of the disease and its comparative simplicity, the results of operative treatment have hitherto been far from ideal. The two operations of choice have been: (1) Eversion of the tunica with posterior anchoring sutures (Jaboulay). (2) Excision of the parietal layer of the tunica (Burgman).

Eversion.

The disadvantages of the method are:—

1. *A lump* of variable size, representing the turned-back tunica, invariably persists behind the testicle and, although quite harmless, is often a source of worry and discontent to a fastidious patient; in cases with a thickened tunica it adds appreciably to the size and weight of the scrotal contents.

2. *Recurrence.*—This is often due to faulty technique, but a certain number of recurrences occur in spite of all care and skill. A few are due to the anchoring sutures getting undone. In such cases the two turned-back flaps of the tunica simply refold themselves and heal in front of the testicle, thus reconstituting the anatomy of the part. I have operated on two such recurrent cases and, apart from the linear scar in the skin, it was impossible to notice during operation that the part had been previously operated upon. This slipping of the anchoring sutures may take place during or immediately after operation as a result of using too much force when pushing the testicle back into the scrotum, or using slippery catgut, which is apt to become more slippery still when soaking in hydrocele fluid. I have seen the anchoring reef knots undo themselves while I was watching, just as I was going to close the skin incision—a sight which reminded me very much of a slow-motion cinema. Although this accident is more or less avoidable, the sutures may give way a day or more later as a result of the tension produced by the pressure of the increasingly swollen spermatic cord and epididymis which lie between the two everted flaps of the tunica.

Another cause of recurrence after Jaboulay's operation is incomplete eversion of the tunica. This is usually the result of too small an incision in the tunica so that, although the two edges are turned back and sutured behind, one or more pouches are left above and below where fluid can collect and form localised hydroceles of different shapes and sizes (Fig. 1).

I have operated on a recurrent hydrocele after Jaboulay's operation and found that, although the anterior surface of the testicle was bare, the fluid was enclosed in a serous cavity surrounding the testicle like a filled tyre. There could be no doubt that this resulted from making a very small opening in the tunica and slipping the testicle through it. The lips of the wound then healed to the circumference of the testicle; hence the "tyre hydrocele" (Fig. 2).

Excision.

The chief objection to the excision operation has always been that a hæmatoma almost invariably follows where the tunica has been thick and vascular. Pain from the pressure is a distressing symptom. Such hæmatomata are rarely completely absorbed, so that the majority of cases are left with a hard fibrous mass, resulting from organisation of the clot, with or without a serous collection which may need aspiration, may burst through the cutaneous scar, or even suppurate.

Another objection to the excision operation is the variable amount of traumatic orchitis which follows the unavoidable manipulation of the testicle. Transient as this orchitis may be, there is no clue to the actual amount of permanent damage done to the testicle as a gland of internal as well as external secretion. No investigation has been possible to estimate the amount of atrophy of interstitial and spermatogenic cells or the amount of atresia of seminiferous tubules and vasa efferentia which follows a mere attack of transient traumatic orchitis.

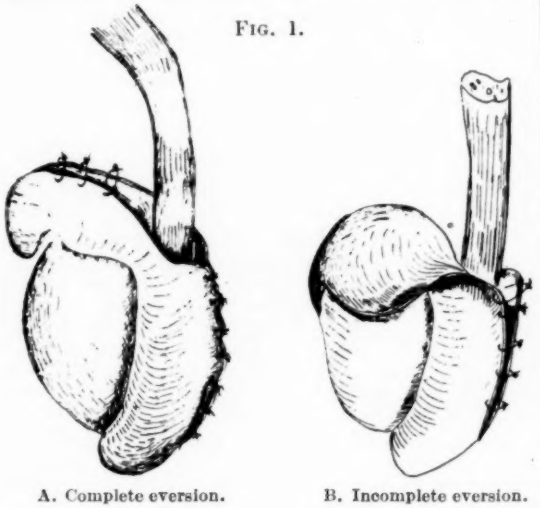
The following two cases, however, suggest a probability that azoöspermia and sterility may follow a double hydrocele operation.

CASE 1.—A healthy man of 40 had been operated on for double hydrocele eight years previously. His semen was reported to contain no spermatozoa and no pus cells. His Wassermann reaction was negative and he had never had gonorrhœa or genital bilharziasis (thus excluding the three common causes of male sterility in Egypt).

CASE 2.—A healthy man of 62 had had two attacks of gonorrhœa, one when he was 20 and one when he was 25 years old. Neither attack lasted more than six weeks and on neither occasion had he any testicular complication. He noticed a double hydrocele when he was 35, was operated on when he was 40, and got married at the age of 42. He has had no children, and his semen was reported to contain no living spermatozoa on three occasions during the last 15 years.

Preventing or diminishing the hæmatoma and allaying the orchitis have been attempted by different operators at different epochs. Post-operative drainage, strapping, evaporating lotions, ice-bags, and other means have been tried, but they are generally ineffective, if not harmful.

FIG. 1.



A. Complete eversion. B. Incomplete eversion.

EXCISION OF THE PARIETAL TUNICA VAGINALIS.

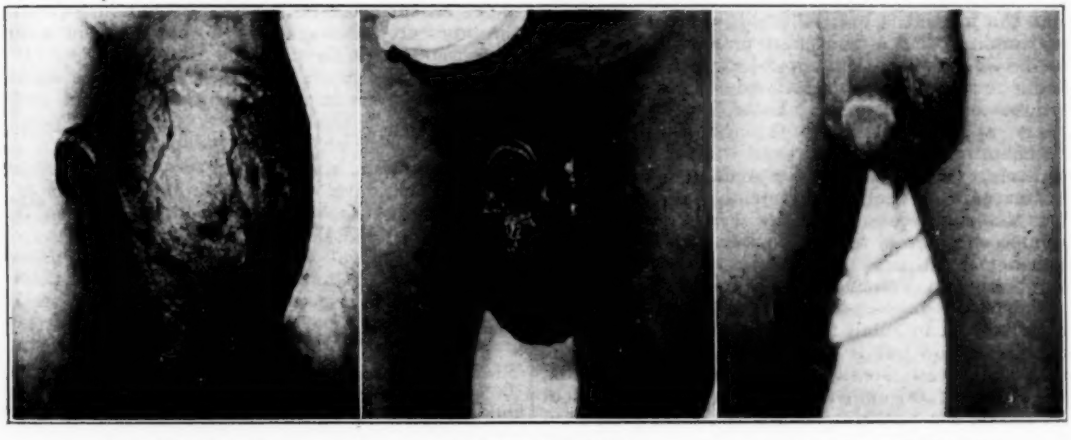
To obviate these disappointments I have lately practised excision of the parietal layer of the tunica and cauterising the edges. The operation is simple in the extreme and is carried out on much the same lines as the clamp-and-cautery operation for piles. A scrotal incision is made and deepened until the tunica is opened and the fluid allowed to escape. The testicle is then pushed out and the tunica everted. It is unnecessary to peel off the different layers which envelop the testicle. Big clamps are applied on the parietal layer of the tunica in a circular manner as near the testicle as possible. Each clamp is then held in turn, the tunica is cut away with the scissors almost flush with the clamp, and the raw surface is seared with the blade of a Paquelin's thermocautery until it is nearly charred. Then the clamp is carefully removed. The next clamp is dealt with in the same way, and so on until the whole parietal tunica is removed. The testicle has to be protected by a wet sponge during the searing operation to avoid radiation of heat. It is then replaced into the scrotum and the skin incision closed with Michael's clip.

FIG. 2.

Recurrent hydrocele in tyre form.

I have done this operation on 20 patients, five of whom had double hydroceles, so that in all 25 hydroceles were operated on by this method. They all healed by first intention. Post-operative swelling and hæmatomata were almost negligible and the temperature charts showed no rise above 37·5° C. in all the cases. Every one of the 20 patients was discharged on the seventh day after the operation. The largest testicle was no more than twice the normal size when the patient left hospital and quite normal at the end of one month. Fig. 3 (A, B, and C) represents the largest in this series—a hydrocele of ten years' duration, containing 1550 c.cm of fluid with a tunica 3 mm. thick.

FIG. 3.



A. Before operation. B. Seven days later. C. Seven months later.

The advantage of this operation over the other two is that handling of the testicle is reduced to a minimum, thus avoiding traumatic orchitis. Post-operative hæmatoma does not occur; the testicle looks and feels normal after operation and recurrence is impossible.

I am indebted to Drs. A. H. Hafez and M. Arafa

for their help and to Dr. Boulgakov, who kindly drew the sketches for me.

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EPITHELIOMA OF THE ŒSOPHAGUS IN ASSOCIATION WITH ACHALASIA OF THE CARDIA.

BY GEOFFREY RAKE, M.B. LOND.,

ASSISTANT IN PATHOLOGY, THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH, NEW YORK.

ACHALASIA of the cardia is of such sporadic occurrence that only when an unusual situation arises will any one person have the opportunity to examine more than a few cases. Yet it is only when a sufficiently large series has been seen that a clear idea as to the course of the disease can be formed. It has so happened that I have been able to examine material from 15 fresh cases. The results of the examination of most of these, with a demonstration of a causal lesion in Auerbach's plexus, have been described in detail elsewhere.[1 2 3] It is the purpose of this paper to discuss certain complications which may appear secondary to the achalasia.

When the mucosal surface of the œsophagus is examined in cases of achalasia, changes are found which vary with the duration of the disease. The non-relaxation of the sphincter produces a stagnation of saliva and food within the dilated lumen, and this mixture forms a splendid pabulum for bacterial growth. An acute œsophagitis is the inevitable result and this condition, having no chance as a rule to heal, progresses slowly to a chronic stage.

In the acute stage, clinical observation shows that the mucosa is red, inflamed, and over-sensitive to stimuli, so that a true spasm may be superimposed on the achalasia. Microscopical examination at such a time reveals a thickened and œdematous submucosa with some cell infiltration. Later, small and shallow ulcers appear, extending through the squamous epithelium to the upper layer of the submucosa, and coalescing to a greater or lesser degree, so that the greater part of the mucous membrane may be lost and the submucosa laid bare. In this stage the submucosa is two or three times the normal thickness, with a marked increase in fibrous connective tissue, and there is a well-marked accumulation of cells—lymphocytes, monocytes, and plasma cells—both scattered and in small foci. Usually the ulceration remains shallow but it may proceed deeper into the wall and even break through into the pleura, producing a fatal empyema. Even where this does not result, the wall may be so weakened that careless manipulation of instruments within the lumen will cause a rupture.

In the majority of cases, examination of the gross specimen shows a more or less irregular upper limit to this ulceration, which corresponds to the height of the column of retained food. Often, however, small islands of epithelium, standing out in clear relief from the ulcerated surface, remain in this vicinity or lower down on the wall. If the irritation ceases, these epithelial islands will show active growth and an attempt will be made to heal over the entire ulcerated surface. Usually, however, the irritation is at best intermittent, the intermissions corresponding with periods of more active treatment, and they are followed by further accumulations of putrefying material and a recrudescence of the irritation. There results a condition which I have several times observed and which is described in the literature—namely, an irregular epithelial hyperplasia, with the production of small, wart-like nodules or definite papillomata. These at first are benign overgrowths of the same nature as those seen elsewhere in the intestinal tract, but as the irritation continues and an opportunity to heal is not presented, a further change may result—the formation of a malignant epithelioma.

Such a sequence of events is not unusual elsewhere in the body. Precisely the same picture is seen in ulcerative colitis, in which the epithelial islands remain or appear on the ulcerated surface and produce, in turn, papillomata and subsequently carcinomata.[4] The irritation of spontaneous or familial polyposis within the stomach or the large intestine will, in time, almost inevitably give rise to a malignant growth.[5]

In our own experience such a sequela in achalasia is of sufficient frequency to call for some attention. In the series of 13 cases examined up to the spring of 1930, two instances of epithelioma commencing in such epithelial overgrowths were recorded.[3] Since that time, through the courtesy of Dr. Francis Scrimger, of Montreal, and Dr. T. L. Hardy, of Birmingham, two further cases of the disease have been examined, both of which showed characteristic lesions in Auerbach's plexus. In the second case, that of Dr. Hardy, a large epithelioma was present, and had ruptured into the left bronchus, bringing about death. An examination of sections of this tumour showed extensive keratinisation and epithelial pearl formation, features which are unusual in œsophageal epitheliomata and which stress the marked irritation that must have been present.

Thus, in three out of 15 fatal cases, death has resulted from a malignant growth arising upon the ulcerated surface. Such cases are not infrequent in the literature, although they do not occur in as high a percentage as that of the present series. It is only by examination of a reasonably large number of cases that the importance of such sequelæ can be realised and it is in this way that the report of individual cases becomes of value.

The question arises as to possible prophylaxis against such developments. Undoubtedly, it is of primary importance that every step be taken from the outset to avoid damage of the œsophageal mucosa, for once the ulceration is at all extensive, the position of the clinician is much more difficult. As is shown so conclusively in cases of chronic colitis, no matter how careful may be the treatment, epithelial overgrowth with papilloma formation of the once ulcerated surface is often unavoidable, and from this stage to that of a malignant tumour is apparently but a small step. Thus everything possible should be done within the first period to relieve and prevent all irritation. For this purpose, the diet and régime advised by Hurst[6] seem to be most satisfactory. Mercury bougies should be passed often, to allow complete emptying of the dilated œsophageal sac. Even when the patient no longer feels any discomfort, it is advisable not to depart from a careful diet and régime, and to continue the use of the bougie at regular intervals until there is positively no more retention of food. In the rare cases which resist this more

(*Continued at foot of next page.*)

CLINICAL AND LABORATORY NOTES

ACUTE ANOXÆMIA IN AN ACCLIMATISED PERSON.

By Raymond Greene, B.M., B.Ch. Oxf.,
MEDICAL OFFICER TO THE BRITISH HIMALAYAN EXPEDITION, 1931.

In view of the discussion in the Physiological Section of the British Association on the limits placed by altitude to physical exercise, the following case may be of interest.

X. Y., aged 31, had become fully acclimatised to work at altitudes of over 20,000 feet. During the preceding ten weeks he had spent six weeks above 15,000 feet and two weeks above 20,000 feet. He had climbed Kamet (25,447 feet) and several other high peaks and was capable of hard work at 20,000 feet and over without undue strain.

On July 22nd, 1931, he left camp at 19,000 feet with two companions to make the ascent of a neighbouring peak, 21,400 feet in height. This was accomplished, but on the return journey he was carried away by an avalanche which carried him down some 400 feet, swept him over a bergschrund some 30 feet high, and finally subjected his thorax to very great pressure as the snow consolidated. He was able to extricate himself and to return to camp unassisted, though he suffered from considerable breathlessness on the way. I examined him in camp and found a fracture without displacement of the right tenth rib. The fracture was causing him very little pain and, having no wish to restrict his breathing at so low an atmospheric pressure, I did not strap his chest. He continued somewhat hyperpnœic at intervals during the evening.

On the following day the weather was very cold and it was impossible to leave the tents. The patient therefore had a day of complete rest in his sleeping bag. He suffered practically no inconvenience from the rib and his breathing was normal for that altitude. On July 24th the weather was fine and he insisted on starting out. The expedition he planned involved the crossing of a neighbouring pass about 20,000 feet high. He felt rather unfit on starting, but ascribed part at least of this feeling to staleness and the difficulty he had experienced in sleeping at this altitude. But soon after the start he developed an irritating cough and became very hyperpnœic. At about 19,600 feet he began to retch heavily, and decided to turn back. On the return journey he had several attacks of retching and at a height of about 19,000 feet he lost consciousness for a few seconds. He required assistance owing to the weakness of his legs.

On reaching camp he found that I had gone down the glacier to a camp at 16,000 feet. He wisely decided to follow, but was so weak that he had to be assisted by porters. His breathing, however, improved steadily as he descended. When I examined him he was still hyperpnœic but when he lay down in my tent his breathing soon became normal. Panting attacks followed any attempt at effort. His chest was clear of physical signs.

On the following day his respiration was perfectly normal, except on great exertion.

COMMENT.

A man, who had become apparently perfectly acclimatised to a low partial pressure of oxygen, had his chest movements restricted by bruising of the thorax. As a result he suffered from anoxæmia and developed symptoms usually associated with a sudden reduction of the partial pressure of oxygen in an unacclimatised person. The margin of safety is low. Pneumonia at high altitudes is for the same reason rapidly fatal, the condition of the patient being similar to that of a pneumonic patient at low altitudes whose oxygen demands are suddenly increased by movement.

A CASE OF BRUCELLA ABORTUS INFECTION.

By F. Bedo Hobbs, M.D. Camb., M.R.C.P., D.P.H. Lond.,
MEDICAL OFFICER OF HEALTH FOR FARNHAM, SURREY.

Bassett-Smith[1] states that on account of its variety of forms undulant fever is seldom recognised in its early stages in countries where it is known to exist, and that nearly every case is first treated for some other disease. If this is true in countries where the disease is known to be endemic it is still more likely to happen when the disease is rarely seen and is sporadic, as it is in this country.

HISTORY AND BACTERIOLOGICAL FINDINGS.

The patient, a lady aged 56, on Nov. 19th, 1929, felt generally out of sorts and discovered that she had a temperature of 102° F. She complained of feeling chilly; she had headache and a pain in the right side of her chest. Apart from the temperature and a rapid pulse there were no physical signs of disease, and it was thought that she was probably suffering from a chill, for she had got wet through a few days previously. The temperature gradually fell during the next few days, but from Nov. 26th onwards it steadily rose again, being a few points higher each evening until it reached its maximum of 101° on Dec. 6th. By this time the patient was looking distinctly ill. There was a slight cyanotic tinge about her lips and face, the tongue was very furred, the pulse was persistently rapid, the abdomen was tender all over, and she was somewhat constipated. She complained of pains in different parts of the body, but especially in the head and less frequently in the back, chest, and legs. She had a slight cough and there were a few râles at the base of the right lung. Her blood was found to agglutinate *Bacillus paratyphosus* B in a titre of 1 in 150.

During the next few days the temperature gradually fell, but from Dec. 12th to 19th it steadily rose again. The abdomen was rather doughy and distinctly tender on palpation, especially in the right iliac fossa. Flatulence was troublesome and the bowels were very constipated. The spleen was not definitely palpable. Pains of a rheumatic type were complained of, particularly in the calves, head, and neck. The pulse-rate was persistently over 100 and drenching night sweats were a very marked feature. Towards the end of December several red scaly papules appeared on the arms and buttocks, but were not like the rose spots of typhoid. On Dec. 19th the blood was found still to agglutinate *B. paratyphosus* B in a titre of only 1 in 150. Since the patient had never had typhoid or paratyphoid fever, and had not been inoculated against them, it was felt that agglutination in this low dilution at this stage of the illness was not sufficient to warrant a diagnosis of a paratyphoid infection. A blood count showed: 5,500,000 red cells, 4000 white cells,

(*Continued from previous page.*)

conservative treatment, surgical intervention, with forcible dilatation of the cardiac sphincter from below, is indicated.

In those cases in which papillomatous growths are known to be present either before treatment is started, or in spite of treatment, it would seem advisable to insist that the patient present himself regularly for œsophagoscopic examination so that any over-activity of one of these nodules may be noticed early and treated accordingly.

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and a hæmoglobin percentage of 80. The differential count showed polymorphs, 760 (19 per cent.); small lymphocytes, 1720 (43 per cent.); large lymphocytes, 1360 (34 per cent.); large hyalines, 80 (2 per cent.); eosinophilis, 40 (1 per cent.); basophils, 40 (1 per cent.). Platelets were plentiful and no abnormal red cells were seen.

On Dec. 23rd a culture from the stools showed no evidence of any of the enteric group, but revealed a pure culture of *B. pyocyaneus*. A catheter specimen of urine was sterile and contained no pus, albumin, or sugar. The sputum was scanty and contained no tubercle bacilli. Opinions varied on the pathogenicity of *B. pyocyaneus* in this case, but salol in large doses seemed to have a good effect, as the patient's general condition improved and the temperature gradually came down to normal, except for one or two little jumps to 99°. During most of this time she was very depressed and irritable and occasionally her mental condition was distinctly peculiar. At the end of January no *B. pyocyaneus* could be found in the fæces.

By the first week in February she was getting up, and went to Eastbourne to convalesce. I did not see her again until Feb. 28th, when her temperature was 101·4°, her pulse-rate, 132, and her respiration-rate 24. She stated that during the fortnight that she was away she had a temperature in the evening of 100°–101° but did not remain in bed. She did not feel well but had no definite symptoms. The tongue was clean, she was slightly constipated, and there was little abdominal tenderness except on deep pressure. She was suffering from insomnia and her mental state was one of general suspicion and constant anxiety and worry over the most trivial things.

On March 4th she was seen by Dr. Geoffrey Evans, and at this time, partly owing to absence of any record of the temperature during her visit to Eastbourne, the initial undulating character of the temperature seemed to have changed to a slight fever oscillating about and above normal; there was, however, a record of fever for the previous four days. Dr. Evans was doubtful as to the diagnosis, and expressed the opinion that the patient's present loss of health might be due to Graves's disease. The evidence of Graves's disease was wasting, pigmentation, and tremor of the fingers; myocardial weakness with dilatation of the heart and a hæmic murmur; tachycardia (120), a full sudden pulse, and big pulse pressure (152 mm. Hg systolic, 60 mm. Hg diastolic); visible and palpable swelling of the thyroid gland.

Another specimen of blood was taken and found to agglutinate *B. paratyphosus* B up to 1 in 50.

The undulant temperature then recommenced, being even more marked than before, the diurnal rise increasing and diminishing in a regular way, taking from five to seven days to rise to its peak and the same time to fall again. On two occasions she had rigors coinciding with the peak of the temperature. As the temperature rose the symptoms became more pronounced; there was general discomfort in the abdomen with definite tenderness over the ascending colon and particularly in the gall-bladder region, and often a good deal of mucus in the stools. There was doubtful enlargement of the spleen. The mental condition was distinctly strange at these times; she had delusions of persecution, and often refused food on the ground that it was poisoned. The pulse remained rapid and she felt faint on the slightest exertion. Sweating was still very marked and troublesome and the patient had lost about 2 st. in weight since the onset of the illness. As the temperature fell both mental and physical symptoms improved.

Dr. Evans saw the patient again with me on April 11th; we then recognised the significance of the undulant temperature, and specimens of blood were taken to Dr. R. G. Canti, who reported as follows (see Table).

Dr. Canti stated that the agglutination obtained was significant although the titre was not high, and he was of the opinion that the agglutination results, taken in conjunction with the undulating temperature, made the diagnosis of *Br. abortus* infection certain.

The blood count then (April) was: 6,268,000 red cells; 3400 white cells; hæmoglobin, 74 per cent.; polymorphonuclears, 1224 (36 per cent.); lymphocytes, 2057 (60·5 per cent.); large hyalines, 85 (2·5 per cent.); eosinophils, nil; basophils, 34 (1 per cent.).

It was unfortunately not possible to attempt to isolate the organism from the blood or urine. A stock vaccine was obtained and five millions were given, followed by nine weekly injections increasing up to 125 millions. The later ones were followed by a rise of temperature and marked local reaction at the site of injection, but there was no constitutional disturbance. A further agglutination test three and a half weeks after the first showed no change in the titre.

Emulsions.	Serum dilutions.					
	1/25	1/50	1/125	1/250	1/500	1/1250
1. *Br. melitensis* I*	–	+	+	tr.	–	–
2. ,, ,, II*	–	–	–	–	–	–
3. ,, ,, III*	–	+	tr.	–	–	–
4. *Br. melitensis*†	–	+	+	–	–	–
5. ,, *abortus**	–	+	+	+	–	–
6. ,, *abortus*†	tr.	+	+	tr.	–	–

* National Collection. † Oxford.

Water control, nil.

Serum controls.—Emulsions Nos. 1, 2, 3, 4, and 6 showed no agglutination with sera derived from two other sources, and emulsion No. 5 showed no agglutination when tested against three other sera.

The temperature gradually settled about June 28th, and became normal about July 19th; the last dose of vaccine, which was followed by a rise of temperature to 101·4°, was given on July 1st. The patient's appetite, which had been very bad, improved greatly; she became quite cheerful and lost her pains. The tenderness of the abdomen gradually disappeared, that over the gall-bladder being the last to go, and by the beginning of August she was getting up for most of the day without any ill-effects except for some tachycardia. The blood pressure was 140 mm. Hg systolic, 75 mm. Hg diastolic, and a blood count then showed: 4,720,000 red cells; 5300 white cells; hæmoglobin, 75 per cent.; polymorphonuclears, 2650 (50 per cent.); lymphocytes, 2332 (44 per cent.); large hyalines, 150 (3 per cent.); eosinophils, 106 (2 per cent.); basophils, 53 (1 per cent.).

COMMENTS.

The total duration of the pyrexia was just over 35 weeks, which is, I believe, the longest case recorded in this country. The source of the infection was obscure; the patient has not been out of this country for 20 years and no other cases, as far as I know, have occurred in this neighbourhood. Inquiries were made as to the incidence of epidemic abortion in pigs and cattle locally, and elicited the fact that, while no epidemic was reported, the actual number of abortions in 1929 had been higher than in previous years. The patient attributed her illness to a meal of underdone pork, which she had at a local restaurant two days before the onset of her illness, and it is possible she is right, for differential agglutination reactions seemed to show that the agglutinin in her serum was the product of an antigen more nearly allied to the porcine strains than the bovine. If this is so, the incubation period, of which at present nothing is known, must be a short one.

Before the diagnosis was finally established the following diagnoses had been considered: influenza, paratyphoid, tuberculosis, subacute bacterial endocarditis, intestinal toxæmia, and thyrotoxæmia. This list, with the exception of thyrotoxæmia, which was perhaps peculiar to this patient, I have since found to be almost identical with the list given by Kern[2] of the mistaken diagnoses at some time applied to his cases.

Glandular fever also occurred as a possible diagnosis because at one time in this illness I had two cases of glandular fever under my care (one of which was recently described by Evans and Robb [3]) in which profuse sweating and polymorphopenia with lymphocytosis were marked features. Glandular fever should, I think, be added to Kern's list of differential diagnoses, because the characteristic enlargement of the superficial lymph glands, which is nearly always present, is sometimes delayed for two or three weeks; even the presence of these glands will not entirely serve to eliminate an abortus infection, for this was a feature of the case reported in Scotland by Norman and Robert Cruickshank.[4]

The agglutination to a member of the enteric group in a low dilution may be misleading, as in this case. In the case reported by Scott,[5] *B. typhosus* was agglutinated in a dilution of 1 in 150, probably due to war-time inoculation; Warren, Smith, and Linder [6] report two similar cases, in one of which an injection of typhoid vaccine may have been the explanation. There was no available explanation for the other case, and this, like mine, was probably due to cross-agglutinins.

The outstanding feature appears to be a wealth of symptoms with a dearth of physical signs, and among the many disorders of function occasioned by any prolonged fever the main characteristics appear to be:—

Fever, very frequently of an undulant type with a periodicity of five to seven days.

Sweating, which is particularly troublesome to the patient and is usually severe and occurs at night.

Joint and muscle pains, especially in the early stages of the illness.

Blood count.—The red count varies from normal to a mild secondary anæmia, but the white count is nearly always decreased, and the differential count shows a low polymorph and a high lymphocyte figure.

My figures of 19 per cent. polymorphs and 77 per cent. lymphocytes, which were confirmed by another observer, were extremely marked in this case. Kern,[2] in his comprehensive report of 36 cases, gives the lowest polymorph figure as 22 per cent. and the highest lymphocyte as 62 per cent., though Bierring [7] among his 150 cases records a relative lymphocytosis of 79 per cent. As the ultimate diagnosis must depend on the agglutination reaction and the demonstration of the *Br. abortus* organism it behoves everyone to carry out these investigations in all cases of continued obscure fever.

Treatment.—Salol seemed to have a beneficial effect in the early stages of the illness but did not appear to be of any value later. American observers seem rather sceptical as to the value of vaccine treatment, because it is a disease in which antibodies are present in large quantities in the blood. In the above case the patient's condition certainly began to improve with the administration of the vaccine, though whether this was post or propter hoc I should not like to say on one case alone.

In conclusion, I should like to express my grateful thanks to Dr. Geoffrey Evans for his continued help in a long and difficult case.

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BRITISH MEDICAL ASSOCIATION.

ANNUAL MEETING IN EASTBOURNE.

SECTION OF SURGERY.

AT the meeting of this section, held on July 24th, with Mr. HAROLD UPCOTT (Hull) in the chair, Mr. GEOFFREY JEFFERSON opened a discussion on the

Surgical Treatment of Trigeminal Neuralgia.

He said that it was necessary to define the type of neuralgia that could be truly termed trigeminal neuralgia. In his experience the true trigeminal neuralgia cases were slightly rarer than intracranial tumours, and no inference could be drawn from the sex incidence. The pain was confined to one side of the face, and at the onset to one division of the nerve, usually the second or third, but it spread relatively rapidly to involve both second and third divisions. Involvement of any nerve but the trigeminal was rare, and the first division was very seldom involved. The pain was brief in duration, and when it passed the patient was usually comfortable. The stimulus necessary to produce the pain was often very slight, such as a breath of wind, or the actions of talking and eating, so that these patients tended to have a mask-like countenance or pseudo-palsy. The quality of the pain was sharp or lancinating, in contrast with the burning, throbbing pain characteristic of an inflammatory lesion. The term "tic-douloureux" was not a good one, since many patients did not have spasm, and when they did the pain was present before the facial movement.

In cases of true trigeminal neuralgia remissions were an important feature; these might be of brief or of long duration, sometimes years passing between attacks, but there was no regularity in the time intervals. The pain was strictly anatomical in its distribution, and in Mr. Jefferson's series occurred only in 2 per cent. of cases in the first division, a point of considerable interest in connexion with surgical treatment. In the second division the pain was superficial in character, and appeared to be in the soft parts, chiefly the upper lip; in the third division the pain was deep seated, affecting the bone and gum, and extending back to the tragus, little or no pain being referred to the tongue.

ATYPICAL NEURALGIAS.

Mr. Jefferson then dealt with the difficult group of atypical neuralgias; the pain was continuous in character and of a pulling quality. It usually affected all divisions of the nerves from the onset and frequently overflowed to the neck and shoulder. The diagnosis of such cases was important, since surgical procedures which were efficacious in the true neuralgias give no relief A mistaken diagnosis might be made in cases of glossopharyngeal neuralgia, owing to paroxysmal pain in the ear, but in these cases there was no implication of the face. Surgery was not effective in cases of post-herpetic neuralgia, except in the few cases where the pain is paroxysmal. In another small group the pain was due to the pressure of a gumma or tumour affecting the Gasserian ganglion. In these cases, however, there was nearly always analgesia or anæsthesia of the affected area, whereas in the true paroxysmal neuralgia there was no alteration in the sensory perception of the skin, certainly no diminution.

TREATMENT.

Mr. Jefferson then discussed the treatment, giving a brief account of the history to show the evolution that

had taken place. Hutchinson's operation for the removal of the lower two-thirds of the ganglion long held the field for the three reasons that had led him to perform it: (1) that the ophthalmic division was rarely affected, (2) that by leaving the first division the cornea remained sensitive and neuro-paralytic keratitis was avoided, and (3) that the cavernous sinus was not injured. This operation had been abandoned for the more modern one of division of the sensory root by the temporal extra-dural route, in which the cavernous sinus was in no danger. This procedure had lowered the mortality-rate to a remarkable degree, and it was now 0·6 per cent. or less. The total division of the sensory root was open to the dangers associated with an insensitive conjunctiva; a further modification consisted in the preservation of those fibres in the root that supplied the eye, and was spoken of as "fractional division of the sensory root," this being made possible by the grouping of predestined fibres in the root. The selection of fibres to be cut might be rendered impossible by previous alcohol injections. The results of this fractional division were all that could be desired as regards relief of pain, and left a minimum of anæsthesia, the line of demarcation passing through the centre of the cornea, thus very considerably reducing the risk of keratitis. Attempts should always be made to spare the motor root also. Mr. Jefferson held that, considering the power of selection and the low mortality of the modern operation, alcohol injections should be reserved for those cases which were judged to be physically incapable, by reason of age or existing disease, of undergoing operation.

ALCOHOL INJECTIONS VERSUS OPERATION.

Mr. A. A. McCONNELL (Dublin) said that the diagnosis was on the whole easy, but that young people or those with pain in the first division should be suspect; he agreed that such patients were not improved by surgical interference. Alcohol injections had dangers which should always be borne in mind, and unless performed by those experienced in the technique might lead to fixation of the eyeball or to deafness from blocking of the Eustachian tube. In his opinion the patient was unfortunate who had a primary successful injection of alcohol; when the symptoms recurred they submitted to further alcohol injections, which might have little success. In his view injections of the different divisions of the nerve tended only to tide the patient over his pain into a period when he became too old to have operative procedure. The average age of patients operated on by him was 65 years. Care in technique was of great importance, particularly in certain respects. If after the section of the root there appeared to be even the slightest bleeding, a muscle plug should be placed on the foramen into the posterior fossa, in order to prevent blood from passing into that region and from giving rise to basal meningitic symptoms. If troublesome bleeding occurred during exposure of the root, Mr. McConnell advised stopping the operation and proceeding to section of the root a few days later. Keratitis appeared to be much less frequent since posterior root section had become the classical operation. The fact that there was no interference with the ganglion probably contributed to the absence of keratitis as a sequela, since keratitis still occurred frequently after ganglion injections. He emphasised the fact that old people stood section of the sensory root better than any other operation.

Mr. H. S. SOUTTAR said that the division of the root was the ideal procedure, but had some praise for alcohol injection of the ganglion, a procedure that occupied a few minutes, and in his experience gave satisfactory results. He used a modification of the Härtel method. The lambda was defined, and one finger placed on it, the needle was then introduced one inch outside the angle of the mouth, neither above or below, and pointed to the index finger on the lambda, the remaining procedure being the same as in the Härtel method. After the foramen ovale had been entered, it was important to pause for a moment to make sure that no cerebro-spinal fluid was coming from the needle; if this occurred it meant that the needle was not in the ganglion, but in the subarachnoid space, and should be withdrawn. If the ganglion had been entered he introduced a minute quantity of novocain and tested for anæsthesia; if this test was positive he slowly introduced 1 c.cm. of alcohol. His custom was always to stitch the upper and lower eyelids for five days, and he had had no trouble from keratitis.

IMPORTANCE OF ACCURATE DIAGNOSIS.

Mr. NORMAN DOTT said that the physical cause of this disease was quite unknown, but it must be recognised as a definite clinical entity when cases were being selected for treatment. Atypical neuralgia was quite unsuited to surgical interference, with the one exception of neuralgia secondary to malignant disease. In defining the disease he looked for certain symptoms, (1) the site of the pain, (2) its character, (3) the causes of precipitation of the pain, (4) the periodicity of the pain. He laid some stress on the fact that a diagnosis could be made, because nearly all the cases sent up to him showed clear evidence, from the procedures to which they had previously been subjected (e.g., extraction of teeth, operation on sinuses), that the clinical characteristics of trigeminal neuralgia were not properly understood. He was in the habit of injecting a little novocain or percain into the ganglion as a diagnostic measure during an attack. In old patients, as Mr. McConnell had said, the operation was a slight one, and the patients were allowed up on the second day. He did a partial division of the root, in most cases sparing the motor root; although bilateral cases were rare, it was important to leave this root intact in case the patient should get a recurrence on the opposite side. This operation produced a cure, since the division took place before the fibres had entered the ganglion. He paid particular attention to the eye; and if the whole root had been sectioned the patient wore goggles after leaving hospital. If conjunctivitis supervened the eye should be left alone, no active treatment being pursued; but the sparing of the ophthalmic root appeared to be the best protection against keratitis.

Mr. DONALD ARMOUR said that Spiller had been wrongly credited with the modern operation of root section; Victor Horsley was the first person to divide the sensory root on Dec. 11th, 1890, and it was right that his name should be associated with the introduction of this procedure. In Mr. Armour's experience, patients with atypical neuralgia refused operation when they were told that one side of the face would be anæsthetic after operation, whereas true sufferers welcomed anything that would give them relief from the spasms of pain. He was dubious about the advantage of alcohol treatment.

The PRESIDENT said that patients were sometimes ungrateful, and came back complaining of an uncomfortable sensation in the anæsthetic area.

Mr. JEFFERSON agreed that paræsthesia gave great trouble in some cases. He thought that the partial

division of the sensory root was the correct procedure, and that alcohol should be kept for the very aged and infirm.

SECTION OF ORTHOPÆDICS.

Mr. A. S. BLUNDELL BANKART presided over the meeting of this section held on July 23rd, when Prof. W. E. GALLIE, of Toronto, opened a discussion on the

Transplantation of Bone.

He said that although bone transplantation had proved to be one of the most spectacular and important additions to surgery within the last 20 years, the development of a perfect technique had been slow and even now failures and disasters were frequent. A review of his cases had shown that among the causes of failure, infection was the most important, since it might not only prevent the graft from uniting to the bed, but also introduced the complication of septic necrosis of bone. Prof. Gallie had noticed great differences of aseptic technique in different operating rooms; he himself used the Lane technique in all its details. Albee, on the other hand, depended on rapid and skilful performance to safeguard the patient. Certainly the Lane technique, unless skilfully and carefully used, only complicated and prolonged the operation. Prof. Gallie recalled the fact that a bone transplant, unlike those of skin and fascia, dies and ultimately undergoes complete absorption in its new bed. He showed lantern-slides demonstrating both the gross and microscopic appearances of this process and drew particular attention to the lacunæ where cells were dead or had disappeared, those cells alone remaining alive which were in the cut ends of Haversian canals and so able to use any lymph available. These cells must not be abused, as by burning with a hot-saw; any technique should protect the endosteal and periosteal aspects of the graft, where such cells abounded. The slides showed new capillaries growing into open Haversian canals, and osteoblasts making excavations in the dead graft; then a few days later such cavities were shown plastered with new bone till ultimately the whole graft was absorbed and replaced by new cancellous bone. Success depended on (1) primary union; (2) firm healing of graft to bed; (3) final union of fragments to one another. An analysis of failures showed that the commonest defect was not securing contact of graft to bed *over a sufficient area;* in radius or ulna for example, a graft should be embedded 1½ in. into each fragment; in tibia 2½ in. at each end. Another common error was insufficiently close apposition between graft and bed; even such a gap as one-eighth of an inch would cause non-union, and experimental work provided convincing evidence that close apposition was all important. Successful grafting thus called for a fair degree of craftsmanship. Immobilisation was of even greater importance in a bone-graft than in a simple fracture, and to secure it both an external splint of plaster-of-Paris and internal fixation should be used till consolidation of callus had had time to occur. The bed into which the graft was placed should be vascular. The ivory, sclerosed ends of bones, which were usually present in the cases that need a bone-graft, were unsatisfactory in this respect and the graft must extend beyond such areas and come into contact with healthy bone. Some writers contended that the mere removal of the sclerosed ends and free opening up of healthy bone were in themselves sufficient treatment, without the insertion of the graft, but Prof. Gallie did not agree with this. In any case the technique should vary with the problem presented and the same plan should not be adopted in all cases; the mechanical details should only be settled after the field of operation had been exposed. An adequate incision was essential, but the periosteum should not be needlessly stripped from the bone ends. For slender bones like the clavicle, radius, ulna, and fibula, Prof. Gallie advised the diamond-shaped graft, which should be sprung into the bed and further secured by beef-bone pins, passed transversely, so that during application of the splint the graft should not be shot out of the bed. He demonstrated this technique by lantern-slides. He condemned the medullary peg, as it too often acted as a plug, preventing the necessary outflow of osteogenetic tissue from the bone ends. A graft of the whole fibula into the shaft of the femur did not have this drawback, as its central cavity was available for osteoblasts. He advised the inlay-graft for big bones like the tibia. Before grafting it was necessary to restore alignment and secure proper apposition, which might demand screws or even metal plates. The graft itself must (1) contain living elements; (2) be strong enough to act as a temporary splint; (3) resist disintegration till sufficient new bone had been laid down to prevent its collapse. To attain these ends it should contain both endosteal and subperiosteal cells, but the periosteum need not be taken with it, since when left behind it could be sutured to close the cavity from which the graft came. Experiments showed that loose-textured bone such as rib-bone resulted in the most active proliferation, but such a graft fractured readily if subjected to strain. When available, a sliding-graft was the best. A region where the rib-graft gave a good result was the mandible. Prof. Gallie showed slides to demonstrate the technique of splitting the graft, so as to apply its central surfaces to the raw surfaces of the jaw. He showed also his special instruments for drilling and tapping bone to receive the boiled-beef bone-pegs. He advised making the hole in the graft loose, so that the peg could be screwed right into the bed. He strongly recommended the shortening of a bone, so as to get end-to-end union, rather than an attempt to bridge a wide gap. When bridging was unavoidable, he used a diamond-graft surrounded by multiple slivers and also crushed cancellous bone. The graft was cut with the motor-saw. Prof. Gallie believed that strict adherence to the principles he had outlined would make failures rare.

Sir ROBERT JONES and other speakers having congratulated Prof. Gallie on his convincing and vivid presentation of the subject, Mr. R. C. ELMSLIE said that in his view the external splint should not be changed too soon—e.g., in two weeks when the graft was least stable. In reference to the death of the graft, he quoted cases which suggested that its proximal end was revivified very rapidly. He had found it easy to bridge gaps in the tibia left by old osteomyelitis, but not those of ununited fractures. He inquired whether Prof. Gallie resorted to the two-stage graft operation—i.e., preliminary excision of scar-tissue, which had proved so useful with war cases. He did not agree that it was wise to shorten the lower limb much.

The PRESIDENT commented on the curious fact that terminal grafts often united well, though bridge ones seemed not to do so. As an old pupil of Lane he was glad to hear that there was still a field for internal fixation apparatus.

Sir W. DE COURCY WHEELER agreed that terminal grafts were effective and quoted cases showing

the amazing way in which some grafts survive in the presence of sepsis.

Mr. H. PLATT commended the two-stage operation for fractures in civil life where non-union had followed infection and necrosis, but he did not believe in shortening the lower limb, though the procedure was useful for the upper limb.

Mr. A. MITCHELL asked what was the best type of graft for fusing the sacro-iliac joints, and Mr. ROWLEY BRISTOW asked what was the best method of fusing tuberculous hips, as Hibbs's technique did not appear to give the same results in other people's hands as in his own.

Prof. GALLIE replied that being usually unable to distinguish between sacro-iliac and lumbo-sacral involvement, he preferred a massive graft which fused both—i.e., a piece of the posterior part of the ilium. In regard to tuberculous joints, he was loth to open them up, as he had had a death from tuberculous meningitis after excising a localised tuberculous cavity from the neck of the femur.

Adolescent Coxa Vara.

Mr. G. S. PERKINS read a short paper on adolescent coxa vara—i.e., slipped epiphysis. He pointed out that the cause of separation of the epiphysis was unknown and that in these cases it occurred exactly through the epiphysial line, not through part of the diaphysis, as in true traumatic cases. He divided cases into four types: 1. Minor incomplete separation which he considered irreducible. This could only be diagnosed by most careful examination of a skiagram. The only treatment necessary was rest—e.g., by a well-fitting calliper. 2. Repeated incomplete slippings, also in his opinion irreducible, since forced manipulation merely strained the capsule and led to stiffness later. These also required rest and if late deformity was severe, an osteotomy could be performed. Early osteotomy merely produced aseptic necrosis of the head and stiffness. 3. Rapid, complete slipping, which was best reduced by gradual traction, 20 lb. applied by means of a pin through tibia or lower end of femur, no other fixation being needed. X rays showed excellent results from this method. 4. Late coxa vara, in which the arc of range of the hip is abnormal, internal rotation and abduction of the joint being reduced and their opposites increased. If this gave disability, the range should be improved by a subtrochanteric osteotomy. Persistent arthritis following any of these groups should be treated by arthrodesis.

REVIEWS AND NOTICES OF BOOKS

An Introduction to Medical Statistics.

By HILDA M. WOODS, Assistant Lecturer, London School of Hygiene and Tropical Medicine; and WILLIAM T. RUSSELL, Statistical Department, Medical Research Council. London: P. S. King and Son, Ltd. 1931. Pp. 125. 7*s*. 6*d*.

HOWEVER much he may wish to do so, the medical officer of health cannot escape from the more elementary forms of statistical analysis. Often he can show the success of his régime only in statistical terms, or perhaps explain its apparent failure by knowing the fallacy of accepting certain statistical values merely at their face value. He must know how to assess the size of the population of his area between censuses, and to calculate its vital indices—birth-rate, death-rate, infant mortality-rate, and the like. The crude death-rate, he should, and usually does, realise, may convey a wrong impression, and he should be familiar with the meaning of the standardised death-rate and the methods of computing it. These are only the bare essentials. All public health workers will be in a position to make a much better use of their material if, in addition, they are familiar with the various constants of the frequency distribution, and the measurement of interrelationships as exemplified in the coefficients of correlation and regression. It is to meet the needs of such workers that the book has been written; it is intended, the authors state, as a simple introduction to statistical analysis, suitable to the needs of those taking the course for the Diploma in Public Health. It should fulfil this purpose extremely well, being written concisely and clearly, demanding no knowledge of algebra, and providing carefully chosen examples of the calculation of each statistical constant which the worker should have no difficulty in mastering and applying to his own data. The work deals with the elements of census-taking and the English registration system; the tabulation of data and its expression in graphical form; the calculation of vital indices, crude and standardised; the various constants in use as averages and measures of dispersion; correlation and regression; life tables and sampling. The only chapter which is at all difficult to follow is that on sampling, and this is a subject which is admittedly very difficult to convey to the beginner, even in its most elementary form.

This book should be of value in a wider field than that of the special class of students that the authors had in mind. For the general reader who wishes to understand economic and social statistics, as Prof. Major Greenwood points out in his preface, guide-books are plentiful. But the statistics of the General Register Office are quite as important as those of the Board of Trade or the Ministry of Labour to anyone who wishes to understand the world we live in, and guides to the methods used in analysing them are not so easy to find. This elementary handbook should inspire many students to go further into a subject, often maligned, which they will find fascinating.

Physiology of Muscular Exercise.

Third edition. By F. A. BAINBRIDGE. Rewritten by A. V. BOCK, M.D., Ph.D., Assistant Professor of Medicine, Harvard; and D. B. DILL, Ph.D., Assistant Professor of Biochemistry, Harvard. London: Longmans, Green and Co. 1931. Pp. 272. 15*s*.

THE physiology of muscle contraction has bulked largely in the literature of recent years, but much of what has been written has been essentially academic, that is, has dealt with the activity of the muscle as an isolated tissue. It is refreshing therefore to turn to a book which makes clear the interdependence of heart, brain, and muscle. The story told by the late Prof. Bainbridge is here elaborated in the light of recent investigations. It says much for the careful work of the original author, that most of the conclusions reached by Bainbridge in 1918 still hold good. After dealing with the chemical aspects of the contraction of muscle, the ancillary factors involved in the maintenance of muscular efficiency in the

individual are considered. The importance of the heart is shown by the fact that at rest the circulation-rate round the body is about 6 litres per minute, and that this may be increased to 20 litres during heavy work; the coronary circulation is held to be seven times as great as when the body is at rest. No evidence is adduced to show that adrenalin appreciably modifies the tone of the blood-vessels during exercise. By constriction of the splanchnic vessels, and dilatation of the muscle capillaries, the circulation through the muscles may be increased by six to nine times that obtaining during rest. It is concluded that the coördination is effected by the central nervous system, and that the maximum working efficiency is determined not only by the functional capacity of the muscles, but also by the supply of oxygen to muscle, heart, and brain.

The authors make some interesting observations on the physiology of athletics, and offer suggestions of practical importance. They have found no certain evidence that the practice of athletics by men in good condition is injurious to the heart, or that the longevity of athletes is altered by strenuous courses of physical training. They have formed the conclusion that while diet must be adequate in amount, and must be properly assimilated, its exact nature is of little importance. The summaries at the end of each section of this book and the comprehensive bibliography add to its value.

La poliomyelite.

By Dr. PAUL DUHEM, Electro-radiologiste de l'Hôpital des Enfants Malades. Paris: Gauthier-Villars et Cie. 1931. Pp. 137+xi. Fr.25.

THIS is a good little monograph. It gives in a clear, brief, and accurate manner an outline of the main features of poliomyelitis. The author has had experience of about 800 cases, most of which it has been his duty to treat by electrical methods. Perhaps the most valuable parts of the book are those which analyse the paralyses from which the commoner deformities result, and describe the treatment by various physical methods during the stages of recovery.

Therapeutics, Materia Medica, and Pharmacy.

Fifteenth edition. By SAMUEL O. L. POTTER, A.M., M.D., M.R.C.P. Lond., formerly Professor of the Principles and Practice of Medicine in the Cooper Medical College of San Francisco. Revised by R. J. E. SCOTT, M.A., B.C.L., M.D., New York. Philadelphia: P. Blakiston's Son and Co., Inc. 1931. Pp. 997. $8.50.

THE original purpose of the author was to present in a single volume and in a concise manner the essentials of materia medica and therapeutics. Dr. Scott has made no change in the general plan, but the book must be regarded as a compilation rather than a critical account of modern pharmacology and therapeutics. Part I., the largest section of the book, contains a list of all the official and many of the non-official drugs arranged in alphabetical order, and gives an account of the important preparations, the pharmacological action, and the therapeutic uses of each. Part II. is devoted to pharmacy, and has been written with the view of offering to the young practitioner the information necessary to enable him not only to prescribe but also to dispense his own medicines. Part III., the therapeutic section, opens with a list of standard authors, and then proceeds to deal with the treatment of various diseases, arranged alphabetically, by giving a list of the chief remedies recommended by these authors. Under diabetes insipidus, for example, there appears the following: "Ergot has cured many cases. . . . Adrenal extract has given good results. Nitroglycerin has been employed with good results. . . . Sodium salicylate, in small doses, very effective in some cases. . . . Alum has produced good results." This may conceivably be of some value to a practitioner at his wits' ends to know what to do for an incurable disease, and glad of any kind of suggestion of some drug he has not tried; but it does not help in that simplification of modern therapeutics to which the editor in the preface to the previous edition gives his hearty approval. The next edition would be improved if it were less encyclopædic and more critical.

Teeth, Bony Palate, and Mandible in Bantu Races of South Africa.

By J. C. MIDDLETON SHAW, M.A., B.Dent.Sc., D.D.S., Professor of Dental Science, University of the Witwatersrand, Johannesburg. With a Foreword by Sir ARTHUR KEITH. London: John Bale, Sons and Danielsson. 1931. Pp. 134. 12*s*. 6*d*.

IT is satisfactory to get a solid contribution to anthropology from an active member of the dental profession, for the teeth and jaws play such an important part in the history of man. Sir Arthur Keith in his preface tells us that the investigations of Dr. Middleton Shaw are valuable because previous to their publication anatomists had no detailed knowledge of the teeth and jaws of the Bantu race. The work consists of a minute study of Bantu teeth and jaws, normal and pathological. In general, these teeth show much the same characteristics as those of other races, though they are larger than those of the modern Englishman or Bushman. The third molars, though more liable to variation than the first or second molars, are well-formed functional teeth. Dental caries is rare, but degenerative changes of the alveolar bone are common, and over 50 per cent. of the skulls examined show some degree of alveolar absorption. It is interesting to find that the condition of taurodontism, which is characteristic of the teeth of Neanderthal man, is also found in hybrids where the elements of fusion were Bantu or Bush with Boskopoid or Australoid peoples. Dr. Shaw gives a good account of the mutilation of teeth in different tribes.

Recent Advances in Entomology.

By A. D. IMMS, M.A., D.Sc., F.R.S., Chief Entomologist, Rothamsted Experimental Station, Harpenden. London: J. and A. Churchill. 1931. Pp. 374. 12*s*. 6*d*.

THIS book is produced on the same lines as the other volumes in the valuable "Recent Advances" series. It summarises in a compact form the additions to entomological knowledge obtained within the last few years on a number of selected subjects. These include external morphology, palæontology, and phylogeny, sense organs and reflex behaviour, coloration, certain aspects of ecology, parasitism, and biological control. A short but well-selected bibliography is appended to each section. The author's object throughout has been to balance pure and applied entomology, and to illustrate the practical applications of a knowledge of insect physiology and ecology. The outlook on the applied side is purely agricultural; no aspects of medical entomology are considered.

Brain, Mind, and the External Signs of Intelligence.

By BERNARD HOLLANDER, M.D. London: George Allen and Unwin. 1931. Pp. 288. 12*s.* 6*d.*

THE thesis of this book is the importance of cerebral localisation to the understanding of the varying abilities of man. It is richly illustrated with references, lengthy quotations, diagrams, and photographs of men eminent in science, literature, art, philosophy, and crime. With such a deep well of information from which to obtain facts, one would have expected interesting arguments in favour of a theory of localisation which closely approaches, if it does not actually endorse, the teachings of phrenology. The arguments in the book are extraordinarily inconclusive however in that, while the author at one stage appears to accept the fact on eminent authority that the brain works as a whole, he still brings forward evidence, largely from the middle of the nineteenth century, that human behaviour in its manifold expressions is dependent upon local development of the cortex, and that this influences head shape. While enthusiastic about clinical observation, he derides laboratory technique, both physiological and pathological. The work of Lashley, which he may know, is not mentioned. He is of the opinion that the brain is as much an organ for the expression of instinct and emotion as it is of intelligence, but he devotes his attention entirely to the cortex, ignoring the importance of the thalamus in this respect and the part played by the endocrine glands in the governing of temperament. While endorsing the general thesis of Kretschmer, he is so captivated by the shape of heads that he seems to ignore the fact, confirmed by biological as well as by neurological studies, that behaviour is a function of the organism as a whole. The book, however, has a certain value at the present time when constitution is so much discussed and cerebral localisation theories are in the melting pot, and the rich bibliography is a measure of the author's wide reading.

Les malades dits imaginaires.

Par M. NATHAN, Ancien Interne des Hôpitaux de Paris. Paris: G. Doin et Cie. 1931. Pp. 134. Fr.14.

Dr. Nathan's attitude to his subject may be recognised from his interpolation into the famous phrase. Imaginary invalids, in the literal sense, do not exist for him; but he is well aware of the hypochondriacs and other true invalids who have been so regarded. His book is characteristic of modern French psychiatry in its insistence on metabolic, endocrine, and autonomic changes. He points out that many patients have been designated "malade imaginaire" because they did not fit into any category known to the physician, and he rehabilitates them, to use his own expression, by pointing out the significance of alkalosis, bile-stasis, hypersympathicotonia and its opposite, and disturbances of ænæsthesia. There are sections on obsession and "pithiatism," and a lengthy one on hypochondria which is of especial interest. The author discusses the alleged relation between hypochondria and paranoia, of which Génil Perrin made so much, and describes a group of "hypochondries de couverture" in which the hypochondria is only superficial. The final section on therapeutics, though brief, is of catholic range, and expresses well the view, so often put forward in the course of the book, that physical and psychic, especially affective, changes cannot be separated.

There are, as is natural, many references to Molière and the comic Argan he created, but Dr. Nathan has not mentioned the curious fact that this is one of the few instances where a disease has been named after a fictitious person: in Boissier de Sauvages's great Nosologia Methodica there is a section on "Melancholia Argantis, seu Melancholia aegrorum imaginariorum." Dr. Nathan quotes some acute remarks of Montaigne on "imaginary" illnesses.

NEW INVENTIONS

A NEW APPARATUS FOR THE MANAGEMENT OF A COLOSTOMY.

As soon as a colostomy wound has healed the large bowel can be trained, by means of regular irrigation, to empty completely every morning and to remain inactive for the following 24 hours, but hitherto the morning toilet of the bowel has been a troublesome and messy performance, owing mainly to the difficulty of directing the efflux of a pint or more of water and fæcal matter into a receiver. Messrs. Allen and Hanburys, Ltd., of 48, Wigmore-street, London, W. have made at my suggestion a celluloid horn-shaped tube (shown on figure at A) which has proved most efficient in use and has minimised the unpleasantness of the daily action of the colostomy. The wide end of the horn is placed over the colostomy and held in position by a webbing band so devised that it can be clipped quite easily to the tube when the patient is lying down. At a suitable site on its convexity is a wide opening closed by a removable cap. Useful accessories are the collapsible stand and douche can, as illustrated, and a Canny Ryall metal nozzle with a thumb cock (B) at the distal end of the rubber tubing. Having applied the horn, the patient takes a 26 F rubber catheter, previously attached to the metal nozzle, and slowly inserts it into the bowel through the opening in the horn, at the same time regulating the flow of water by means of the thumb cock. When all the water has been injected, the catheter is removed, the opening in the horn closed with its cap, and a receiver, or better still a jam-pot, containing weak lysol, placed under its narrow end. The patient then reads the paper and smokes until the bowel has ceased acting. He then removes the cap, inserts the metal nozzle through the window in the horn, and flushes the surface of the colostomy and surrounding skin. The apparatus is easy to use, keeps the patient clean, and greatly diminishes the mental and physical discomfort of an evacuation.

CYRIL A. R. NITCH, M.S., F.R.C.S.
Harley-street, W.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 26, 1931.

THE WORLD TO-DAY.

General SMUTS devoted his presidential address at the centenary meeting of the British Association on Wednesday last to sketching the scientific world picture of to-day and to an attempt to state not what the world is—no one could do that seriously—but what it appears to us to be at the moment and in the light of the material, mental and spiritual progress which has been made in the hundred years since the Association was founded. Few men can be so well fitted to cover such a broad canvas. Statesman, scientist, philosopher, lover of his country and of mankind, he is capable of the general view to which his varied interests have led him, and it is no surprise to find that the main conclusion to which his argument leads is that matter, life, and mind are not three separate and unrelated categories but different levels of the same evolutionary activity of which the universe consists. The description of matter as an accumulation of particles was one of the great scientific achievements of the nineteenth century. But it no longer holds good; it was a scientific version of the common-sense view of the world and must now be abandoned. Space-time now appears as our concept of the only physical reality in the universe and the stuff of which the world is made is envisaged as events instead of material things. Matter and energy in all their forms have disappeared as independent entities and have become configurations of space-time—a conclusion which is probably, for the time being, none the less true because it is given to relatively few of us to understand precisely what it means; the important point to realise is that it cannot, by its very nature, be translated into the mechanistic terms with which alone most of us are familiar.

So too with life. Life is not an entity, physical or otherwise: it is a type of organisation, more precisely the specific type of self organisation. A living individual is a physiological whole in which the parts or organs are differentiated for purposes of greater efficiency; they are parts of the individual but they cannot be regarded as units which make up the individual. And the greatest truth about life is the conception of organic evolution; it is the undying achievement of CHARLES DARWIN to have hammered this into the consciousness of mankind. Life has progressively advanced from at most a few simple primitive forms to more numerous and highly specialised forms, and under the double influence of the internal genetic and the external environmental factors it has most nicely adjusted itself to the ever-changing situations in which it finds itself. In the process of this evolution new structures and new functions and powers has successively appeared, culminating in mind and the crowning achievement of human personality. As General SMUTS has argued at length before, evolution results in the achievement of a series of "wholes." A whole is not the sum of its parts or constituted of its parts: its nature lies in its constitution. This is obviously analogous to the conception of matter and energy as configurations of space-time, and the general trend of the recent advances of physics has been towards a recognition of the fundamentally organic character of the material world. Thus if life is interfered with, we have death, not bits of life; and a part of the physical quantum of energy is not something less than a quantum, it is nothing at all. Both the living organism and the quantum are indivisible. EDDINGTON, HALDANE, and others have also pointed out that so far from biology being forced into a mechanistic physical mould, the position will in future be reversed and physics will look to biology and even psychology for hints, clues, and suggestions.

From matter, as now transformed by space-time and the quantum, we pass through life, which is a principle of organisation whereby the space-time patterns are arranged into organic unities, to mind which is a principle of making wholes by discrimination and selection from experience and which reaches its highest point in the realm of values. Modern physics is no longer bound by a rigid determinism of cause and effect and the free creativeness of mind is possible because the world ultimately consists not of stuff but of patterns, the evolution of which involves no absolute creation of something material from nothing. Matter, life, and mind are thus stages of an evolution; man has free will and his spirit is no pathetic phantom but a part of the universe in which it is at home and meets everywhere with spiritual response and hospitality. The whole of the world can be brought into one picture; science is doing its greatest good to man by the æsthetic and religious appeal which in its present form it makes to so many thinking people.

CHRONIC ULCERATIVE COLITIS.

THE cause of this distressing and exhausting complaint is still obscure. For several years Dr. J. A. BARGEN, of the Mayo Clinic, has upheld [1] the claims of a diplo-streptococcus isolated by him from the colonic ulcers. The organism is slightly lanceolate and retains Gram's stain; it is rather difficult to culture but grows well in media with added sugars and rich in vitamins; on blood media it is slightly hæmolytic. It resists heating to 55° C. for three-quarters of an hour. BARGEN has isolated this organism in a large number of cases of ulcerative colitis, usually by direct culture of muco-pus taken from the edge of ulcers observed with the proctoscope; he has found it at the roots of infected teeth and in abscesses of the tonsils. The serum of patients agglutinates the organism only slightly, but animals can be immunised against it and a therapeutic serum has been prepared by

[1] See THE LANCET, 1929, i., 145.

BARGEN from horses. In experiments on rabbits he has shown that inoculation with this organism can produce an affection of the mucous membrane of the bowel similar to the lesions of ulcerative colitis, and he has isolated the organism from the edge of the ulcers and from the mesenteric glands. Much discussion has taken place over BARGEN's claims and results. At a recent meeting [2] of the Royal Society of Medicine, Dr. L. P. GARROD said he had found Bargen's bacillus in 11 out of a series of 17 cases and regarded its presence as significant. Dr. CUTHBERT DUKES however remarked that the organism could be isolated from other types of ulceration and from normal intestines; he had come to the conclusion that sufferers from this disease were born with intestinal apparatus which had a lowered resistance to bacterial infection. And Dr. A. F. HURST reiterated his observation that during life the appearance of the colon in ulcerative colitis was indistinguishable from that of bacillary dysentery.

The tendency of present-day medicine is certainly towards a pluralist view of the cause of ulcerative colitis, as may be seen in an important paper from the Pasteur Institute in Lille by MM. BUTTIAUX and SÉVIN,[3] who take it for granted that infections are the cause of ulcerative colitis, and report a series of elaborate tests in 132 cases of this disease. Their bacteriological studies were based on material obtained from the lower bowel by means of direct vision with the rectoscope, and they give their reasons for having abandoned the attempt to isolate the determining micro-organisms by cultivation of the fæces. Account was taken not only of the bacteria usually searched for, the *coli* group and streptococci, but also of the anaerobes and spirilla. Cultures were also taken from the tonsils, teeth roots, and bile obtained by duodenal tubes; agglutination tests were made on the patients' sera; the intradermo-reaction to various bacteria was observed; and the stools were examined for pus, mucus, entamœbæ and their cysts, and protozoal parasites. The Lille observers conclude that micro-organisms of various groups may be responsible for the disease. Apart from the *Entamœba histolytica* as a cause of subacute and chronic dysentery, they allow the other protozoal parasites of the alimentary tract only a secondary rôle, in that they serve to keep up an irritative colitis which has been started by pathogenic bacteria; it is important however to take appropriate measures against these protozoa, especially *Balantidium coli*, and against intestinal worms. Coming to the diplo-streptococcus of Bargen they regard this as an important cause of chronic ulcerative colitis; the organism may be found in a state of comparative purity in the intestinal lesions, it can be grown outside the body, and it can reproduce the disease experimentally in the rabbit. But it is not specific for all cases of ulcerative colitis. The authors have isolated from many cases a new organism, a diplococcus which tends to form tetrads but not chains, is Gram-positive and immobile. It is aerobic; it will not grow on bile, but is resistant to heat and grows well on subculture in media containing blood or vitamins and sugars. Experimentally it produces lesions in rabbits. Five per cent. of their cases showed signs of chronic dysenteric infection, consequent usually on an acute attack of dysentery it may be years earlier. The low agglutination titre of the serum suggests that a lowered resistance has allowed an acute attæck to become chronic. Success has attended treatment by bacteriophage administered by the mouth. In a further 11 per cent. the authors isolated the bacillus of Morgan; in these cases there was a good response to treatment with vaccines. They regard the gonococcus as a rare but troublesome cause of ulcerative proctitis. Streptococci were recovered 28 times and staphylococci 12 times in the 132 cases. The association of rhinopharyngitis with colitis is noted; *B. pyocyaneus* and *B. mucosum capsulatum* were recovered from bowel and nasopharynx in a considerable number of cases, for the most part of a mild character. The rôle of the anaerobes in causing secondary infection of ulcerated areas, especially just before death, leading to gangrene of the bowel is regarded as insufficient reason for the administration of antigangrene serum.

Summarising these observations it may be regarded as probable that apart from the organisms of Bargen and of Buttiaux-Sévin, chronic ulcerative colitis may be caused by recrudescence of an infection already healed but remaining latent in the body. Such agents are the bacilli of Hiss or Shiga in former dysenteries, of Friedländer in patients who have had nasopharyngitis, and of the salmonella group in former sufferers from paratyphoid. Certain organisms, customary inhabitants of the intestine and generally held to be mere saprophytes, may have their virulence exalted—e.g., *B. coli* or the enterococcus. Dr. BUTTIAUX and Dr. SÉVIN conclude that many cases of chronic ulcerative colitis are due to specific organisms, and their elaborate researches on the flora of the fæces may serve as a guide to other workers in this confusing region of clinical pathology.

[2] Ibid., 1931, i., 636.

[3] R. Buttiaux et A. Sévin: L'étiologie des colites ulcéreuses, Annales de l'Institut Pasteur, August, 1931, p. 173.

NATIONAL HEALTH INSURANCE IN FRANCE.

SOCIAL insurance was adopted as part of the programme of the Radical party in France as long ago as 1885, but only came to the fore when Alsace and Lorraine returned at the end of the war with a complete health insurance system on the German model. The advantages were so obvious that a measure providing similar facilities for the rest of the country was passed through the legislature in 1928. It was largely based on the German model, and was so repulsive to the French temperament that a storm of protest was raised, and the Government hastily suspended its operation. There was then an interim period of two years during which evidence was taken from various bodies, and a new scheme was drawn up; this became law in July, 1930. As is not uncommon in all countries,

the medical profession was at first taken unprepared, but the interim offered them an opportunity which they did not fail to seize. So effectively did they combine, and so powerful was their threat of non-coöperation, that every one of their demands was granted, and the resulting scheme may fairly be called a system of health insurance after the doctor's own heart.

Medical men in France are grouped in local professional bodies known as *syndicats*, which are themselves united in a national federation claiming to represent 17,000 doctors. This federation raised a fund of over a million francs, set about a thorough analysis of insurance, formulated its demands, and called a mass meeting at which the demands were adopted. The dentists and pharmacists supported the doctors, and each profession formulated a programme for its own particular department. A propaganda campaign was organised; medical men were urged to maintain a united front, have nothing to do with the scheme, and sign no contracts until these demands had been met. The future insured patients were assured, by leaflets and notices, that the doctors had no wish to oppose insurance, but were determined, in the interests of the patients, that the insured should have the same service as the private patient. The doctors declared that they would never have practice divided into two groups, insurance and private; that they would not have each of their patients turned into a "number," to which medical services would be distributed as "benefits in kind"; and finally, most important of all, that the *secret médical*, so profoundly revered in France, should never be violated. The slogan of the profession was *entente directe*, a private practice relationship for all insured persons. This involved free choice of doctor, pharmacist, midwife, masseur or other attendant; direct payment of all fees to the doctor by the patient at the time of consultation, and reimbursement to the patient later at the office of his approved society; complete safeguarding of professional secrecy; complete freedom of prescription; and purely medical control of medical matters. The profession insisted on its altruistic motive, and drove home the saying: "Opprimer le médicin, c'est tuer le malade." In fact, these requirements were completely granted, as will be seen from the description of the patient's procedure given on p. 707 in a summary of the provisions of the Act.

Although the revised law was supposed to come into force a year ago, there were certain delays, and there was, as may be imagined, considerable confusion in the early months. Insured persons had great difficulty in understanding what they were supposed to do, and since most of the responsibility for form-filling rests on them, there was for a time something approaching chaos in a good many *caisses*. The scheme can therefore be said to have been working only for about six months, and it is too early to express an opinion on it. It is certainly an extremely interesting experiment, peculiarly adapted to the French temperament. It preserves individualism in a collective movement, and makes the insured person—at least in theory—the equal of the rich patient, who can pick and choose where he pleases, and is allowed to be even fantastic in his choice. On the whole, it seems likely to work. There will, no doubt, be modifications in detail, but probably no alteration in principle. There is a possibility that the victory of the doctors was too great, and that there may be a reaction against the provisions which make the scheme so easy for them. There is severe criticism among all parties of the amount of form-filling and red-tape imposed on the insured person, and also of the discrepancy between the tariff of liability of the *caisses* and the amount that the people have to pay. A serious disadvantage for chronic invalids and victims of long illnesses is the six months' limit set to benefit; but this difficulty may be met when the disability scheme comes into force. In some quarters there is fear lest the *caisses* should organise their own medical service, as in Germany; this is naturally regarded as a potential calamity by the professional bodies, and every effort is being made to promote coöperation with existing health services.

MEDICAL INDUSTRIAL PSYCHOLOGY.

THE syllabus of lectures to be delivered at the London School of Hygiene and Tropical Medicine (see p. 719) indicates a claim to respectable ancestry on the part of a specialty that has been regarded as a newcomer to medicine. Galen's writings on the temperaments have encouraged Prof. Major Greenwood to welcome him as a clinical psychologist; Stahl's philosophical controversies apparently have reference to psychological problems as well as to chemical; and Ramazzini's study of industrial diseases will perhaps turn out to be anticipatory of modern views. It is Prof. Millais Culpin's share to link these older methods of approach with those current theories of psychology which throw light upon problems not unknown to our forbears, but more pressing in this industrialised age. Occupational selection and guidance must depend upon those factors in the material and psychological environment which will be dealt with by Mr. Eric Farmer and Miss May Smith, and further application of modern methods will be exemplified in the study of accident causation, sickness absenteeism, and the occupational neuroses. Although planned for the students in the School's class for the Diploma in Public Health, these lectures give a comprehensive survey of a subject that is more and more forcing itself upon the notice of medical men, and for the understanding of which their previous training has perhaps not equipped them sufficiently. The historical method of approach seems peculiarly suited to this subject—in which the mental attitude of the student is especially important—since it must involve the tracing out of earlier attitudes and their influence upon the development of psychology.

FINANCES OF THE BOMBAY HOSPITAL.—As the outcome of a representative conference to discuss the present difficulties regarding the provision of hospital facilities in Bombay, the Government of Bombay have appointed a joint committee to raise money from the public towards meeting the expenditure of the city hospitals and to distribute it in equal moieties between the government and the corporation. The funds so raised are primarily to be devoted to maintaining hospital facilities on the scale obtaining at the beginning of the present year.

ANNOTATIONS

MICHAEL FARADAY.

RATHER more than 100 years ago Oersted, in Denmark, observed that an electric current passing along a wire would deflect a magnetic needle in its neighbourhood, and soon afterwards Ampère, in France, described a dynamic action between conductors carrying electric currents. Then Arago and Davy discovered the power of an electric current to magnetise iron or steel, and there was abundant evidence that electric currents could produce magnetic effects. Everybody felt that the converse ought to be true, that magnetism could be converted into electricity; but it was not until 1831 that, after four years of patient investigation and failure, the crucial experiment was made on August 29th by Michael Faraday, then laboratory assistant to Sir Humphry Davy at the Royal Institution. On that day, as Faraday's diary shows, he wound two coils of wire on to opposite sides of a soft iron ring, connected one coil to a battery and the other to a galvanometer, and at "make" and "break" of the battery circuit observed deflections of the galvanometer connected in the other circuit. In this observation was the starting-point of the utilisation of electric power for the purposes of man. The centenary of that event, one of the greatest in history, is being celebrated this week. It is almost impossible for any mind to conceive the extent to which Faraday's discovery has revolutionised human life, and to-day we are only on the threshold of the potentialities which the dynamo has opened up. No one has ever carried out more fully the principles of inductive reasoning, but Faraday did not, it seems, himself visualise the application of his studies to the treatment of disease. Yet no department of medicine has been left unaltered by it. The use of electric current for the illumination of the body from within has given an enormous impetus to the early recognition of disease, while the X ray diagnosis and the electrocardiograph are both based on induced currents. The therapeutic uses of electricity are still largely unexplored, especially in relation to the ionic theory, which we also owe largely to Faraday's work.

The man to whom all this is due has a history romantic enough to be worthy of the fairy story that his work spells. He was brought up in great poverty and was almost entirely self-taught. His great chance came when he attended a series of lectures by Sir Humphry Davy at the Royal Institution in 1812. He made notes, copied them out, bound them—for he was by then apprenticed to a bookbinder—and sent them to the lecturer, expressing his desire for scientific work. Sir Humphry said to one of the managers: "What can I do with him?" Swift came the answer: "Put him to washing bottles—you'll soon see what he is fit for." So Faraday became bottle-washer in the laboratories of which 12 years later he was to be director. As with all really great men, the secret of his success eludes analysis. He had that innate genius which can never be explained. Perhaps the nearest approach to describing the mainspring of his life is made by Lord Rutherford when he says that it was the underlying idea of the unity of all the forces in nature. Faraday was a splendid type of the Baconian philosopher, with the faculty of clear and convincing exposition of the most abstruse subjects. In character, he was simple, modest, and singularly unselfish. To our own profession he was ardently attached, and the tie was mutual.

The Faraday centenary exhibition, which was opened at the Albert Hall on Wednesday afternoon by General Smuts before his induction as president of the British Association, will remain open until Oct. 3rd.

JOINT COMPLICATIONS FOLLOWING SCARLET FEVER.

RECENT research on streptococcal throat infections and acute rheumatic fever has revived interest in the streptococcal theory of rheumatism. Dr. H. Zischinsky has been analysing the records of some 20,000 cases of scarlet fever in Vienna.[1] He divides joint complications following scarlet fever into three groups: so-called acute rheumatoid arthritis, pyæmic arthritis, and a group of late-developing, heterogeneous, atypical instances of joint affection. Of his first group, into which 509 patients fall, there is little to say except that the nomenclature chosen seems unfortunate. Any or all joints may become affected by pain and swelling, usually between the fifth and twelfth day, and the involvement of joints of the cervical spine may sometimes give trouble in diagnosis. Of the pyæmic group of cases Dr. Zischinsky observes that he has little new to record, except to call attention to the good prognosis in these cases and the relative frequency with which the sterno-clavicular joint may be affected. His paper is mostly concerned with the third group; he believes that this atypical variety of joint involvement has become more frequent in recent years. His description of this group is based upon 102 cases, which form about 17 per cent. of the total cases of joint complications in scarlet fever, excluding cases of frank pyæmia involving the joints. The onset of joint trouble in these patients did not occur until after the twelfth day of the disease (in contrast with the rheumatoid group, where the onset was earlier) and the majority of patients were in the sixth or seventh year of life. Most of them showed a definite though moderate rise in temperature. In 61 cases a multiple arthritis was present; in the rest (41) a single joint was involved. In the mildest cases the only symptom was pain, frequently of a fleeting nature, while in others a certain degree of swelling occurred. The symptoms were usually of short duration, lasting less than five days in most cases, but in one case the joint complication lasted as long as 41 days. A noticeable feature of this group showing late joint complications was the complete absence of involvement of the endocardium or pericardium. Dr. Zischinsky lays stress on this point, which in his view differentiates the condition from acute rheumatism occurring with scarlet fever patients. In the differential diagnosis yet another possibility has to be considered—notably that of joint involvement complicating serum sickness when antiscarlatinal serum has been given. In most of the cases described by Dr. Zischinsky the joint symptoms were controlled by the administration of aspirin, although this was not always effective. Certain cases of painful multiple arthritis, accompanied by fever, and of long duration, were particularly intractable.

Despite the absence of the heart involvement, the group of cases described bears a strong resemblance to the type of acute rheumatism common in this

[1] Jahrb. f. Kinderh., 1931, cxxxii., 303.

country among children. The interval of 12 days or more between the onset of the scarlet fever and the appearance of joint involvement is noteworthy in this connexion. It would be of interest to examine the scarlet fever figures in this country to see if the rheumatic complications would fit into Dr. Zischinsky's classification, and whether the grouping would be in the same proportions.

AVERTIN IN AUSTRALIA.

THE personal experiences of an anæsthetist who undergoes an operation under some new form of anæsthesia are always of value as expert testimony. Dr. H. M. Owen [1] relates his views after having had the misfortune to require anæsthesia on five different occasions. He has thus tried, as a patient, ether by the closed method, ether by the open method, the ethyl chloride ether sequence (twice), and avertin and ether. He remarks that "the experience of undergoing induction with and recovery from ether, or ethyl chloride followed by ether, causes a definite amount of hesitation to repeat the experience, if not an actual dread of it." His experiences with avertin followed by a small amount of ether was in connexion with an operation for removal of appendix and cure of an inguinal hernia. He gives a detailed account of his sensations, which were never unpleasant, from the beginning of induction till complete return of consciousness, and he records his opinion that avertin is an ideal anæsthetic for induction purposes and that owing to the small amount of ether used in conjunction with it, as well as to its own properties, it gives such freedom from harmful after-effects, that its use should rapidly become general.

In the same journal Ellen M. Balaam gives a detailed account of 38 cases for which she used avertin. Her practice is to use a larger dose than that generally employed in this country and as she usually precedes it with morphia it is not surprising that in a considerable proportion of cases no inhalation anæsthetic at all is required. Present opinion, however, is that this method of procedure is more risky than the use of avertin solely as a means of procuring comfortable induction without mental stress or excitement. Most anæsthetists do not use any preliminary hypnotics with avertin, regarding it only as an adjunct and in no case as the sole anæsthetic.

PROGRESS IN THE TREATMENT OF DIABETES.

AN analysis by the Metropolitan Life Insurance Company of New York shows a considerable rise in the death-rate from diabetes mellitus in the later age-groups.[2] Dr. E. P. Joslin,[3] in an address to a section of the American Medical Association, explains this rise by pointing to the increase in the population over that age. As the average age at death of the United States population is 44, diabetes will, he suggests, continue to increase—unless preventive measures are taken—until this average age at death reaches the fiftieth year, the leading year for the onset of the disease. In his opinion it is not strange that diabetes has advanced, especially in women at middle age, because obesity, which he regards as an important predisposing factor, is common at the menopause. Despite the statistics, therefore, he claims that the present treatment of diabetes is better than is thought, and that the physician should be slow to depart from standard methods. The average patient in 1931 has, he says, already lived half as long again as the average patient in January, 1922, and the average age of patients to-day is 50 as against 42. Moreover, the first year of the illness, from being the most serious, has now become the safest. Joslin quotes figures to show that, whereas the carbohydrate taken in the early days of the Allen era averaged 26 g., it rose, even without insulin, in the latter part of that era to 43 g. and, after the introduction of insulin, reached 71 g. in 1923 and 96 g. in 1927. Insulin has steadily increased it, and the average carbohydrate in representative groups now varies, he says, between 125 g. and 144 g. The protein varies between 3 g. for the young child and 1 g. or 0·6 g. per kg. for adults and nephritics. The fundamental principle of treatment, he says, is the avoidance of overweight, though reduction of weight must be gradual. He is somewhat in favour of a low carbohydrate diet; with high carbohydrate diet he has found reaction to be more common and troublesome, and patients who have lived on the high carbohydrate diet for some years prefer to lower it, sometimes to even 150 g., so that they can have 100 g. of fat. Insulin, he holds, will rectify all the metabolic abnormalities of the diabetic, and every diabetic patient should turn to it if simpler methods fail to satisfy his glycogen needs. He foresees that if Klotz's theory—namely, that insulin may protect the median muscular coat of the blood-vessel—is correct, a profound alteration will take place in the causes of mortality. A generation ago diabetics died of tuberculosis, half a generation ago of coma, and they now die of arterio-sclerosis, but this tendency may pass away with the increasing use of more normal diet. Cancer has tripled as a cause of death in Joslin's own patients.

Joslin holds that the efficacy of treatment should be judged by results on children, and he appeals to the physician to make the diabetic child his teacher. Children, he says, follow their instincts and require great vigilance and understanding, but deserve and need coöperation in the task of learning the tricks of diet, exercise, and insulin. The increased survival-rate of children he regards as one of the most hopeful indications of the improvement in treatment. In the discussion following Dr. Joslin's address, Dr. R. M. Wilder commented on the unusually good health of children who had survived for several years on well-planned diets containing adequate supplies of minerals and vitamins; their teeth, he said, were exceptionally good, their general endurance was remarkable, and they were comparatively free from complicating infectious disease. In a group of 167, none had had symptoms of tuberculosis. In common with Joslin, he notes that arterio-sclerosis does not occur in children treated with insulin from the first.

Diabetes will never be successfully attacked, Joslin thinks, until the patient, his family, the community, the physician, and the hospital are trained in its prevention, treatment, and complications, and have the facilities for treatment within reach. "Wandering diabetic nurses" should, he holds, be available for the general practitioner, for they will not only save his time, but also teach patients to use insulin and diet and to combat coma and gangrene. One such nurse can be endowed for a sum no larger than the endowment of one diabetic bed in hospital. The well-to-do and altruistic diabetic patient might, he suggests, lend his private nurse to a physician for an hour or two a day to teach other diabetic patients; this would be an act of real value, and would save

[1] Med. Jour. Australia, June 20th, 1931, p. 745.
[2] See THE LANCET, August 15th, p. 364, and August 22nd, p. 436.
[3] Jour. Amer. Med. Assoc., August 29th, p. 595.

many lives. Patients might contribute collectively towards endowing a nurse. Joslin calls on hospitals to adjust their staffs and personnel to the treatment of diabetes; to standardise their medical and surgical methods of treatment, and actively to teach the prevention of complications, and to try to avert the development of the disease in especially susceptible patients. It is nowadays a graver medical risk to withhold surgery, especially in old patients, than to subject them to operation. Every other diabetic patient is, he says, a surgical patient, and all possible foci of infection must be removed to guard tolerance. Diabetic surgery is made safe by coöperation between physician and surgeon, close observation of the urine and blood for the first few days after operation, provision for from 50 to 100 g. of carbohydrate to maintain nutrition, and the administration of insulin, if necessary, to promote its utilisation and avoid acidosis. The extra attention now given to the surgical diabetic patient has probably much to do with the improvement in the results. The mortality has decreased greatly, according to Joslin's tables, in the last eight years; surgery for cancer has trebled, and for gangrene has nearly doubled, but for thyroid has remained constant, and for carbuncles has decreased, possibly because of increased cleanliness.

THE PUBLIC ANALYST AND HIS WORK.

DURING the year 1930 more than 136,500 samples of food and drugs were analysed by the Ministry of Health; 4·8 per cent. of them were reported as adulterated or not up to standard—the lowest proportion on record. The appointments of 35 public analysts were approved during the year. The work of these officials, as a rule, receives little prominence in the annual health reports of local authorities, a fact which gives rise to a vicious circle in that there is no incentive for the analyst to spend time and energy in making his report readable. We commend to serious study the account given by Mr. F. C. Bullock, B.Sc., city analyst for Leicester, who shows what magistrates can do to render the pathway of the food adulterator less easy and to combat the new methods of food sophistication which continue to crop up. In March, 1930, a Leicester milk vendor was fined £10 in respect of each of three samples of grossly watered milk, and a fortnight later another vendor was fined 40*s.* in respect of each of two samples of milk highly deficient in fat. After convicting, the chairman of the bench remarked that he would deal very severely with further cases of defective milk. Thereafter for several months it was not found necessary to undertake milk prosecutions. Mr. Bullock also brings forward the question of so-called clear mints. These are made from granulated sugar and liquid glucose and contain a little sulphur dioxide derived from the glucose. The unnatural whiteness of some brands suggested that artificial bleach was being used. The analysis of samples confirmed this suspicion. One firm was adding to every 100 lb. of sugar mixture 1 oz. of strong solution of sodium bisulphite saturated with sulphur dioxide from a bottle labelled "Not to be used in confectionery." Convictions were obtained against the worst offenders, but the bleaching of sweets will not cease, says Mr. Bullock, until a clear ruling on the subject is given by the Ministry of Health. Another case brought out the fact that if a retail druggist's stock is protected by a warranty and the stock is more than six months' old, the warrantor cannot be convicted and the public is entirely without protection. The over-watering of spirits is sometimes regarded as a venial matter, but Mr. Bullock aptly points out that whereas the milk vendor only gets 3*d.* to 4*d.* a pint for his mixed drink the publican charges 12*s.* 6*d.* a bottle for it.

DIPHTHERIA BACILLI.

HYGIENISTS have every cause to be pleased with the progress which has been made in dealing with diphtheria in the last 15 years, and we have lately been coming to the general conclusion that Schick testing with toxoid immunisation, intensive serum treatment, and rapid isolation of cases and carriers had together pretty well dissipated the formidable features of the disease, and might before long obliterate it completely. But in the last three or four years trouble has appeared in the place in the scheme of suppression where it was least expected and a type of disease has appeared (or at any rate has been recognised) which is relatively intractable to serum treatment, raising case-mortalities from 5 per cent. to 25 per cent. Noticed first in Berlin, it has since attracted attention all over Europe; it is nasal and pharyngeal rather than laryngeal, and kills older children as well as infants. In the course of their routine work at Leeds, Prof. J. W. McLeod and his collaborators have made [1] the discovery, remarkable in such a well-known organism and probably of considerable importance, that diphtheria bacilli fall into two fairly well-marked cultural groups which are related to the clinical severity of the disease. The *gravis* form is associated with severe toxic cases; it grows in broth with a pellicle and granular deposit, ferments starch and glycogen, and grows on the special isolating blood tellurite medium as a large irregular colony, often like a daisy-head. The *mitis* form is obtained from milder cases, in which there may be extensive membrane formation but no serious intoxication; it grows in broth with a uniform turbidity, does not ferment starch or glycogen, and grows in smaller smooth colonies. The two forms can generally be recognised at sight in the primary cultures, and between 5 and 10 per cent. of cultures are intermediate in one or more characters. At the Leeds Fever Hospital, of 20 severe and hæmorrhagic cases, 18 yielded *gravis* and 1 *mitis*; of 49 carriers and slight cases, 24 gave *gravis* and 23 *mitis*; *gravis* was responsible for 14 out of the 17 cases of paralysis and for all the 11 deaths; the case-mortality of the 63 *gravis* cases was 16 per cent., of the 35 *mitis* cases nil. The facts are impressive. We evidently have a brand of bacillus which is not amenable to treatment with ordinary antitoxin, which it appears is usually made with a strain of intermediate characters. We await the further working out of the immunological relationships with the greatest interest and with tolerable confidence that some satisfactory antitoxin will be produced.

DIET AND DENTAL CARIES.

Mrs. Mellanby's work on diet and disease of the teeth is well known, and the Medical Research Council is publishing a series of reports which will collect it and present it as a whole. The latest of the series deals with the influence of diet on caries.[2] The main purpose of the work covered by it was to determine to what extent dietetic measures could control the initiation and spread of caries. Mrs. Mellanby

[1] Jour. Path. and Bact., 1931, xxxiv., 667.

[2] M.R.C. Special Report Series No. 159. H.M. Stationery Office. 1931. Pp. 19. 6*d.*

had already shown in dogs that good structure could invariably be secured in the teeth by an adequate supply of fat-soluble vitamins, especially vitamin D, and that the amount and character of secondary dentine largely depends on the same factor. Further investigations in a Sheffield hospital showed that children whose diet contained an additional supply of fat-soluble vitamin develop much less caries than children on a standard hospital dietary. The Council therefore decided to undertake an investigation on a large scale, and permission was obtained to work at three residential institutions for children under the Birmingham poor-law authority. These institutions accommodated about 835 children between the ages of 2 and 16 years in a system of cottage homes. It has been found possible to keep about 400 children under continuous observation. The children were divided into groups: to the diet of one group was added a graded and measured ration of cod-liver oil; to that of another a corresponding ration of treacle; to that of a third a corresponding amount of olive oil. Later a fourth group received olive oil with a measured quantity of radiostol. Every child was examined six-monthly and the dental findings carefully charted. The first two years of progress are under review in this interim report. It is as yet too early to answer the question whether the structure and arrangement of teeth is favourably influenced by dietetic measures, but in answer to the question: can the incidence and rate of progress of caries in teeth already developed be lessened by diet? the following answer can be given. The progress of caries in the permanent teeth of the children undergoing this experiment has been significantly retarded in those who received an added ration of fat-soluble vitamins. The increase of caries in the vitamin group was approximately one-third, both in incidence and in extent, of that in the treacle and olive oil groups. The same result applies to the children who received radiostol with olive oil. There was no significant difference between the children who had treacle and those who had olive oil. There is a considerable measure of agreement between these results and those obtained in the Sheffield hospital children and the facts seem to warrant the conclusion that the incidence and rate of progress of caries in fully or nearly calcified teeth can be considerably retarded by the addition of fat-soluble vitamins to the normal diet.

MORBID CONDITIONS OF THE VERTEBRAL COLUMN

DURING the last year orthopædic surgeons in France have been largely concerned with lesions of the vertebral column, especially with those which simulate Pott's disease. In a review of recent orthopædic advances, published in the *Paris Médical* of July 18th, 1931, A. Mouchet and C. Roederer devote a considerable section to the differential diagnosis of these diseases, of which the most important is the Kümmell-Verneuil syndrome. This condition may occur in young men between the ages of 25 to 45 following upon trauma, either direct or indirect, such as hyperextension or flexion. It has three characteristic phases, of which the first one consists of neuralgic pains along the dorsal or lumbar nerves or along those serving the lower limbs; there is usually some motor disturbance, tenderness on pressure over the spinous process of the affected vertebra, and muscular spasm, particularly limitation of extension. These symptoms vary in severity according to the degree of violence of the trauma. The phase lasts from eight to ten days, and is followed by a quiescent period of six to twelve months, during which the patient returns to work. Then, either gradually or suddenly, a kyphosis develops, with a definite prominence over a limited area; the old pains return, the tendon reflexes are exaggerated, and some paræsthesia may be noticed. The general health is never affected, and eventually the symptoms disappear, but the deformity remains. Mr. Roederer notes that attenuated forms of this condition may exist in which the syndrome is incomplete, but generally the clinical picture is so characteristic that there ought to be no difficulty in differentiating this disease from spinal lesions other than caries, with which it is often confused. With regard to its pathology, two schools exist: some regard it as a fracture (Verneuil), others as a peculiar form of a post-traumatic osteoporosis (Kümmell). C. G. Schmorl, of Dresden, is more definite. His view is that the initial trauma produces a crack in the intravertebral surface of a vertebræ; in the course of time the pressure of the intravertebral disc causes this fissure to gape, and herniation of the disc into the spongy tissue results, possibly carrying with it the nucleus pulposus. Pressure-atrophy of the bone necessarily follows, and, at some later date, the vertebra collapses.[1]

Another lesion which may be mistaken for spinal caries is the narrowing of the intervertebral disc associated with muscular spasm. Le Fort and Ingelrans[2] observe that when narrowing of a disc associated with angulation of two vertebræ is seen in a radiogram, Pott's disease is not necessarily the cause. They quote a patient who, ten days after an injury, suffered acute pain in the lower lumbar region and along the course of the right sciatic nerve. A radiogram showed a narrowing of the disc on the left side between the fourth and fifth lumbar vertebræ, so pronounced that the two bones were almost in contact. Both the transverse processes of the fifth lumbar were sacralised, and careful examination showed that the right one was fractured. Its removal completely relieved the symptoms, and the disc returned to its normal shape and size. The sequence of events here would appear to be: fracture of the right transverse process, irritation of the right lumbo-sacral cord, and spasm of the intrinsic muscles of the opposite (left) side, with consequent compression of the disc on that side. Fort and Ingelrans describe other cases, and suggest the possibility that the narrowing of the disc often seen in the early stages of spinal caries, and hitherto regarded as being a sign of its destruction, may really be due to its compression by muscular spasm. Leriche and Jung[3] concur in this view, and describe two similar cases in which the X ray appearances became absolutely normal within ten minutes after the injection of novocain around the vertebral bodies, and Leriche points out that the disc, consisting as it does of fibrous tissue enmeshing a few cartilage cells, and surrounding the nucleus pulposus, can hardly be regarded as a structure susceptible to infection by the tubercle bacillus.

The nucleus pulposus is now coming to be regarded as a structure with an important influence on the mechanism of the vertebral column.[4] It is the pivot upon which all the movements of one vertebræ on

[1] Froelich and Mouchet: Revue Orthopédie, 1930, 3rd série, p. 749.
[2] Le Fort and Ingelrans: Ibid., p. 705.
[3] Leriche and Jung: La Presse Médicale, 1930, April 18th.
[4] Galland, M.: La Presse Thermale et Climatique, 1931, April 15th, p. 254.

another take place, and may almost be said to convert the flat intervertebral joint into a ball-and-socket joint, where lateral movements, flexion, extension, and rotation occur. Under certain circumstances the nucleus is capable of changing its position, and it is due to this fact that compensatory curves are able to take place and to be maintained, the nucleus being always on the convex side of the curve. It has been suggested that the nucleus may lie back so far as actually to invade the spinal theca and to cause compression symptoms. Hernia of the nucleus is, of course, a well-established condition. Discal and nuclear hernias were first described in 1927 by Schmorl, who found them in as many as 38 per cent. of autopsies. They exist in two forms. Those placed centrally are about the size of a small pea, invade the body of a vertebræ, and are surrounded by an area of sclerosed bone; they may extend along a substantial part of the vertebral column in the line of the notochord, and are due to herniæ of the nucleus pulposus. Those placed eccentrically are varied in shape; they also are limited by an area of sclerosed bone, and are regarded as hernias of the disc itself. In a typical radiogram the discs are irregular in outline, thinned, and may present calcified patches; the anterior parts of the bodies of the vertebræ are flattened and often lipped, while the posterior parts are normal in appearance. This condition is not a disease of the disc any more than hernia of the abdominal wall is a disease. It is simply an anatomical abnormality which predisposes to painful adolescent kyphosis, and later to spondylitis deformans. J. Calvé and M. Galland,[5] from observation of 26 cases of adolescent kyphosis, believe that vertebral epiphysitis is much rarer than it is usually held to be; in their series they were only able to find three genuine cases of epiphysitis. The X ray appearances hitherto taken to indicate this disease are, according to them, only secondary effects of herniation of the nucleus pulposus. Abnormalities of the intervertebral discs obviously deserve more attention from those who are studying the pathology of diseases of the vertebral column, and are likely to receive it in the future.

DYSTOCIA AFTER INTRA-UTERINE RADIATION

FIBROSIS of the cervix after intra-cervical radiation for cervicitis or carcinoma is not infrequent; many cases have been reported where insuperable obstruction in labour followed its use. It now appears that a similar condition may follow intra-uterine radiation for menorrhagia. While not astonishing, this is somewhat alarming, in view of the frequency with which the treatment is now used in women of child-bearing age, with a view to bringing about temporary sterilisation and the subsequent alleviation of various menstrual irregularities. In a case reported by C. C. Anderson[6] the patient was 35 years of age, and had had four children, the youngest being 3 years old. She was admitted to hospital for severe metrorrhagia of three months' duration, which had not been relieved by curettage. Radium in a dosage of 1080 mg. hours was applied to the uterine cavity on August 4th, 1926, the applicator being screened by 0·5 mm. silver, 1 mm. brass, and 1 mm. rubber; the patient left hospital ten days later. The periods apparently ceased for a time but later recurred, remaining normal until pregnancy ensued in 1929. Labour began at the end of the seventh month, on Jan. 31st, 1930. No fœtal movements had been felt for 24 hours and the membranes were said to have ruptured a week before. A transverse presentation was corrected on the next day to left occipito-anterior. A firm cartilaginous band was found at the level of the internal os which would not dilate even under deep anæsthesia. In the end, when the patient had become exhausted, Cæsarean section had to be carried out. The transverse presentation had recurred and a hand and foot were in the vagina, the fœtus being dead. At the operation the uterus was found to be unduly fibrotic, and this abnormality was believed to account for the onset of premature labour. When re-examined in August, 1930, the patient was well but had not menstruated again. Dr. Anderson raises the question whether radium treatment is contra-indicated in women of child-bearing age, but concludes that pregnancy so rarely occurs after radiation that a possible fibrosis of the cervix is not sufficient reason for denying radium to the large number of women who would be benefited; but the dosage should be confined to the minimum that will reduce the pathological flow to a physiological one. He advises that when pregnancy does occur, the possibility of failure of the os to dilate should be borne in mind. During labour vaginal examination should be reduced to a minimum and any undue prolongation of labour should be regarded as an indication for immediate Cæsarean section.

[5] Calvé et Galland: Revue d'Orthopédie, 1930, 3rd série, p. 723.

[6] New Zealand Med. Jour., August, 1931, p. 202.

SMOKELESS COAL.

THE conference of the National Smoke Abatement Society, held at Liverpool over last week-end, was the third of its kind, and notable for the declaration of its president, Dr. H. A. Des Vœux, that smoke is simply a luxury of laziness. After dealing faithfully with factory smoke he admitted, however, that smoke from the domestic chimney will not be abolished until smokeless fuel is available at a reasonable price. Mr. Ralph Gibson, on behalf of the Liverpool Gas Company, replied that the gas industry could, if it would, produce a smokeless fuel giving the cheerful effect of coal, and such fuel was in fact sold by his company. In the past this kind of fuel has not proved commercially profitable, because of difficulty in disposal of by-products; but a potential ally of low temperature carbonisation has now appeared in the so-called hydrogenation process. If hydrogen is applied under pressure to coal-tar products a high proportion is converted into motor spirit, and it is understood that at least 100,000 tons of petrol a year are being produced in Germany in this way by a single firm. The application of this hydrogenation process to tar oils and creosote is now being tested by the Government fuel research station at Greenwich with, it is believed, a yield of 92 per cent. of motor spirit and Diesel oil from low-temperature crude oil. It is doubtful whether this semi-coke will completely solve our domestic smoke problem if we have to rely on its replacing coal by virtue of its own merits; probably some form of suasion may be required to prevent the use of smoky coal in domestic grates in cities. Such prohibition, however, would become a legitimate measure if the hydrogenation process lives up to its promise.

Mr. E. D. Simon, M.P., has been appointed Parliamentary Secretary to the Ministry of Health.

At the Royal College of Physicians of London the annual Harveian commemoration will be held on Oct. 19th. Dr. Robert Hutchison will deliver the Harveian Oration at 4 p.m.

OPENING OF THE MEDICAL SCHOOLS.

In connexion with the opening of the session at the London Medical Schools the following arrangements are announced :—

Charing Cross Hospital.—Prizes will be distributed on Friday, Oct. 2nd, at 4 P.M., in the council room by Sir George Newman, principal medical officer of the Ministry of Health, who will give an address. On the following Saturday and Sunday there will be a week-end post-graduate course, admission being restricted to old students of the hospital. On Saturday, at 7.30 for 8 P.M., the annual dinner of past and present students will be held at the Royal Adelaide Galleries, Gatti's Restaurant.

Guy's Hospital.—The winter session will open on Oct. 2nd, at 3 P.M. Sir Farquhar Buzzard will distribute prizes and give an address on the General Medical Council.

King's College Hospital.—The session will open at the Medical School on Oct. 1st, at 2.15 P.M., when an introductory address will be given by Dr. H. R. Dean, professor of pathology in the University of Cambridge. The annual dinner of past and present students will be held the same evening at 7 for 7.30 P.M. at the Connaught Rooms, Mr. L. Vernon Cargill presiding. A series of post-graduate lectures, free to all medical practitioners, is to be given in the Medical School on Thursdays at 9 P.M. from Oct. 8th to Dec. 17th inclusive, and from Jan. 7th to March 17th.

London Hospital.—The annual dinner will be held at the Trocadero Restaurant on Thursday, Oct. 15th, at 7.30 P.M., with Dr. Cecil Wall in the chair. There will be a post-graduate course for former students from Oct. 14th to 17th.

Middlesex Hospital.—The winter session will open in the Queen's Hall, Langham-place, on Oct. 1st, at 3 P.M., when Prof. James McIntosh will deliver the introductory address and Sir John Bland-Sutton will distribute prizes. At 7.30 P.M. on the same day the annual dinner will be held at the Savoy Hotel.

Royal Free Hospital.—Sir John Simon will deliver an inaugural address and present prizes at the London (Royal Free Hospital) School of Medicine for Women on Oct. 1st, at 3 P.M.

St. Bartholomew's Hospital.—The old students' annual dinner will be held in the great hall of the hospital on Oct. 1st at 7 for 7.30 P.M. Sir Percival Hartley will preside.

St. George's Hospital.—Lord Ponsonby will present the prizes and deliver an inaugural address at 3 P.M. on Oct. 1st in the board room. The annual dinner will take place at the Hyde Park Hotel, Knightsbridge, at 7.45 P.M. on the same day.

St. Mary's Hospital.—The dinner of past and present students will be held at the Trocadero Restaurant on Oct. 2nd, at 7 for 7.30 P.M. Sir William Willcox will preside. A week-end post-graduate course, open to all medical practitioners, will be held from Oct. 2nd to 4th in the library of the Medical School.

St. Thomas's Hospital.—The old students' dinner will be held at the May Fair Hotel, Berkeley-street, at 7.30 for 8 P.M. on Oct. 2nd, with Mr. J. Herbert Fisher in the chair.

University College.—The annual dinner of old students will be held at the Hotel Victoria at 7.30 P.M. on Oct. 16th, and the annual dinner of past and present women students of the hospital will be held at the same time at the Piccadilly Hotel. Post-graduate demonstrations for old students will take place on Oct. 15th and 16th.

Westminster Hospital.—An inaugural address will be given in the board room on Oct. 1st at 3 P.M. by Sir Henry Hadow. The annual dinner is to be at the Grosvenor House Hotel, Park-lane, on the same day.

Royal Dental Hospital.—Prizes will be distributed at the hospital on Oct. 2nd at 8 P.M. by Prof. Elliot Smith. The annual clinical At Home will be held on Nov. 21st from 2 P.M., and the dinner of past and present students on the same day at 6.30 for 7 P.M. at the Trocadero Restaurant, with Sir Norman Bennett in the chair.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. A. G. Bee to be Surg. Comdr.
Surg. Lt. E. T. S. Rudd to be Surg. Lt.-Comdr.
Surg. Comdrs. : J. D. Bangay to *President*, for Medical Depôt, Royal Victoria Yard, Deptford ; C. G. Sprague to *Pembroke*, for Chatham Barracks ; and A. G. Valpy French, to *Vivid*, for Devonport Barracks.

ROYAL NAVAL VOLUNTEER RESERVE.

Lt.-Comdr. J. H. Dundas-Grant to *Repulse*.
Surg. Lts. : W. H. Roberts (proby.) to *Comus* ; and T.G. Evans to *Victory*, for Haslar Hospital.

ROYAL ARMY MEDICAL CORPS.

Lt. (on prob.) G. Herbert resigns his commn.
The undermentioned Lts. (on prob.) are secd. under the provisions of Art. 213, Royal Warrant for Pay and Promotion, 1931 : R. Johnston, G. A. Kane, and J. K. Chappell.
Lt. E. A. Stroud (temp. commn.) to be Capt.

TERRITORIAL ARMY.

Lt. T. A. A. Hunter to be Capt.
Lt. H. Watson to be Capt.

NORTH PERSIAN FORCES MEMORIAL MEDAL.

Dr. T. F. Anderson, Colonial Medical Services, has been awarded the North Persian Forces Memorial Medal for the year 1930 for his paper on a "Report on an Investigation of Health Conditions on Farms in the Trans-Nzoia, with special reference to Malaria," published in the *Kenya and East African Medical Journal*, Vol. VI., No. 10, January, 1930, pages 274–308. The North Persian Forces Memorial Medal is awarded annually for the best paper on tropical medicine or hygiene published in any journal during the preceding 12 months by a medical officer, of under 12 years' service, of the Royal Navy, Royal Army Medical Corps, Royal Air Force, Indian Medical Service, or of the Colonial Medical Service.

The Efficiency Decoration has been conferred upon Maj. John Samuel Hudson.

The Territorial Decoration has been conferred upon Lt.-Col. Josiah Walker.

Col. L. D. Bailey, Assistant Director of Medical Services, 47th (2nd London) Div., T.A., has been appointed Hon. Physician to the King, vice Col. J. G. Martin (ret.).

AYR COUNTY HOSPITAL.—Colonel W. J. R. Houldsworth, chairman of the hospital, recently unveiled a bronze tablet in the lecture hall to the memory of Dr. J. F. McGill Sloan, who was lecturer in surgery to the nurses in training from 1911 until his death in May, 1931. The memorial has been provided at the cost of the nursing staff.

QUEEN CHARLOTTE'S HOSPITAL.—The annual report, after recording the opening of the isolation block on the new site at Hammersmith, points out that for the first time in medical history special facilities will be provided for intensive investigation into the causes of puerperal fever. The number of beds has been increased from 80 to 130, of which 20 are in the auxiliary hospital at Hammersmith, and 30 in the isolation block. There were 2444 in-patients during the year, most of them "booked" ; the remainder were "emergency" patients sent to the hospital at the last moment. Of the former, seven died, giving a mortality-rate of 3·2 per 1000 ; six "emergency" patients died, giving a mortality-rate of 27·6 per 1000. The infant mortality-rates were 22 per 1000 in "booked" cases, whereas in the "emergency" cases the rate was 96 per 1000. Each in-patient cost £9 19*s.* 11*d.* The new out-patients attended at home numbered 1771 (34,000 attendances). The income was only £23,161 and the expenditure £29,832, a disparity which is causing the committee great anxiety.

SPECIAL ARTICLES

ECONOMY IN THE SOCIAL SERVICES.

REPRESENTATIVE VIEWS.

LAST week we were able to give the views of two medical administrators on the principles of reasonable economy in the Social Services. This week we give a further sample embodying the mature experience of public health workers in a variety of responsible positions.

III.

I have never been an officer of a local government authority, but I have been for many years a member of such an authority with special interest in the departments of public health (including mental deficiency and maternity and infant welfare) and of education. My experience of the way in which members of such authorities, individually and collectively, react to the call for economy is therefore fairly extensive, and I realise that there are grave dangers in the present situation. There are only too many aldermen and councillors who are ready to retrench without discrimination, and to seize any excuse or opportunity for such retrenchment. I am sure that there will be many places in which serious and enduring harm will be done by a misuse of Circular 1222, and many other places in which it will require much effort on the part of the wiser members of local authorities to prevent such harm. Nevertheless, the process of pruning, wisely performed, may, in most cases, still be a beneficial one.

The hint given in the Circular that the careful scrutiny of the whole field of expenditure should be conducted by a special committee containing a few members who are not members of the authority itself, and who therefore are not subject to electoral pressure, but have expert knowledge of their special spheres, is a wise one; though I fear that prejudice in most authorities will prevent its adoption. There is much unwise expenditure now going on under the head both of education and of public health, though, speaking generally, I think that investigation would show that the unwisdom of particular items is more prevalent in the case of those authorities who have a low expenditure per head of population than in those who have a high one. In the matter of education, I would say only that one of the most valuable pieces of health work in any area may be the instruction in personal and domestic hygiene, practical as well as theoretical, which is given by the teachers in the public elementary schools, and that this can in any case be continued or extended without involving any special expenditure.

On the specifically public health side, one of the first items that will come under review will be the salaries of the staff. Here it should be remembered that a memorandum embodying a scale of salaries has been recently adopted, after negotiations presided over by an independent chairman, by representatives of the medical profession and by those of local authorities. This scale is not binding on every authority, but most authorities, loyal to their negotiators, have, in fact, adopted it formally or informally. Where it is now proposed that a uniform percentage shall be deducted from the salaries of the medical staffs it seems clear that this may wisely be accepted in the emergency by those whose authorities have adopted the scale, but there is a strong case for protest and local arrangement where the authority is already paying its staff salaries well below the agreed scale. Reductions in such cases should not be too readily agreed to.

In some areas, where, for example, clinics have been used largely not merely for giving advice with regard to relatively healthy infants and children, but as places for the treatment of disease and the vending of drugs and articles of food at prices below cost, there is room for the cutting off of the expenditure involved in such misuse, and in some cases for the reduction of the staff which this has necessitated. The use of clinics for their legitimate purpose need not thereby be interfered with. In connexion with maternity services there are large numbers of districts which have done very well in making sufficient provision, but there are even more places in which such provision is woefully deficient, and it would be a disaster to call any halt in these latter authorities.

The ascertainment and supervision of mental defectives is a matter of great national importance, and is at present very badly done, except in a few areas. This should proceed with all vigour, and it is not expensive, but it is to be feared that the provision of special schools or departments, and of colonies for the care of such persons, will necessarily have to be stopped, just at the moment when a great many local authorities were beginning to realise their duties in this regard. In general, it may be said that while expansions of public health work which involve the establishment of fresh institutions and of fresh building will probably have to be held over, savings to the requisite amount may well be made by a restriction of public health services to their strict functions and by a real sacrifice in personal remuneration from those whom authorities are now paying on a scale recognised as just by an independent judge. From others such a sacrifice should not be exacted: they are already undergoing it.

IV.

Economy is a hard word. It is used with great glibness these days by many who have no clear conception of its meaning and implications as applied to the social services, particularly those relating to the public health. Among local authorities there is great variation, both in the manner of spending money and the objects on which it is spent. Some spend lavishly on one section of the service, say tuberculosis; others on another, say hospitals. But whatever the favoured section, the point to be borne in mind is that the local authority has committed itself to a certain expenditure, from which it cannot escape except by way of repudiation either of the whole or of part of its obligations. The latter it might do without seriously compromising efficiency; the former would involve total destruction of the particular service—an eventuality which no local authority could possibly contemplate.

How then can economies be effected? The first and obvious way is by coördinating the various sections of public health activity; the school medical and maternity and child welfare services, for example, might be more completely fused than they are at present, and these again might be linked up with the public assistance and mental deficiency services to the advantage of all four. The tendency to multiply centres, clinics, and personnel requires to be curbed,

and integration substituted for disintegration. To have school clinics and infant clinics held in different buildings, each clinic with its own staff of nurses and doctors, is wasteful in the extreme, and the same may be said of children's homes and hospitals under the maternity and child welfare and public assistance committees.

One central dental clinic might serve a large urban area, and even in scattered rural districts, with the excellent bus services now in being, the number of such clinics now existing might be reduced. Such expensive equipment as X ray plant and artificial sunlight apparatus might with advantage be centralised in one building and used by more than one branch of the service. Vaccination officers might be dispensed with entirely, and their place taken by health visitors. Though such a change would entail the payment of a considerable sum of money to the displaced officers as compensation for loss of office, the outlay would not recur, and in the long run money would be saved.

More efficient almoning of all the services would undoubtedly result in increased income, and materially reduce the balance on the debit side of the account. At present many who could quite well pay a little receive benefits for which they pay nothing. There might be a drastic curtailment of the amount of milk, food, drugs, and dressings distributed gratis to the public. This applies as much to voluntary hospitals and institutions as to the public services.

I agree with the suggestion that the cost of administering infectious diseases might be considerably reduced by cutting out the disinfection of premises in all but the most obvious cases—e.g., verminous households; by discouraging the removal of mild cases of scarlet fever to hospital from homes where there are ample facilities for proper isolation and nursing; and by the distribution to practitioners of prophylactic serum. It is a pity that medical practitioners are so slow in making use of the facilities now offered by many local authorities for the immunisation of children against diphtheria. If only they could be induced to give the effort to build up an immune population their support and backing, the cost in the upkeep of expensive fever hospitals might be halved. Drain testing and flushing are not the big items nowadays they once were. Still the fetish remains in certain places, and has to be paid for. The practice might be entirely eliminated, except perhaps in a few special instances.

Fever hospitals and sanatoria are not generally over-staffed—the opposite is as often as not the case—but the staff is not always used as economically as it might be. By a better grouping of the wards one sister might take charge of a block instead of, as frequently happens, one ward only.

The dispensing and compounding of medicines take up a lot of time and sometimes entail the employment of special staff, where, if discretion and foresight were used, the work could probably be done quite as well by an untrained person or contracted for by an outside firm of druggists. I am now speaking of institutions devoted to special rather than to general work—places such as fever hospitals, sanatoria, and the like. Buying in bulk, through a central purchasing department, of all hospital stores and equipment, instead of, as at present, each institution making its own arrangements for the supplies it requires, would effect a substantial saving.

These are economies which would not detract from efficiency. Nor would they arrest or retard development when the time for this becomes opportune.

V.

Circumstances are such to-day that we must review all social services, not so much because of the financial depression, but because the time has arrived to consider what is essential and what non-essential. Does public health take prior claim over education, must the one be cut in order to maintain the other? Is the upkeep of roads, recreation grounds, fire brigades, public libraries, to be maintained at the expense of the public health and educational services? If the individual is to be dependent upon his own resources for the maintenance of health must he not make his own defence against fire?

There is a risk of the undue cutting of the public health service, because there is no return in hard cash. However much we may dislike it, we must cut our clothes according to the cloth. For some years past the health services have been extending into the treatment of established disease, shelving in some measure the maintenance of physiological health. The former is popular, the latter is fundamental; yet the Local Government Act of 1929 in putting the poor-law services under the county and county borough councils extended still further the *treatment* of disease by *health* authorities. The resolve to have a health service and not a disease service would indicate the direction for economising. Our fundamental is the protection of the public against communal disease, not the treatment of the diseased individual. If it is agreed that it is not the duty of the local health authority to treat the individual at the expense of the community, local authorities can cease to remove tonsils and adenoids and to treat minor ailments, leaving such things to the private practitioner or to the hospitals.

Most of us have, I think, administered our services to the utmost economy, and it surprises me to read in your last issue that two at least of my colleagues are suggesting that their services have been administered extravagantly, and that economies can be carried out without change in those services. No, to me the matter is more fundamental, and a change in the public health service must come. The Local Government Act, 1929, is in practice not economical but extravagant. The more local government is divorced from the locality of operation the more extravagant it becomes; government by county councils leads to the development of county staffs to supervise district staffs. The authority that raises the money should administer the spending of it.

The times demand not so much a superficial pruning in the social services, but the establishment of the fundamentals that make for physiological health. In the words of "Iolanthe"—

> Fold your flapping wings,
> Soaring Legislature.
> Stoop to little things;
> Stoop to Human Nature.

VI.

Many health departments have been parsimoniously treated in the past. Gas and electricity departments, public transport have been supplied with all they needed in up-to-date plant and buildings, because they are potential sources of revenue; public health has been looked upon as a spending department of doubtful utility. There is a risk that the economy campaign will result in some health department staffs having to remain in insanitary offices (for the health officer usually has the worst offices in the municipal service); while many infant welfare

centres, established experimentally years ago in makeshift premises and now due for transfer to properly designed buildings, will permanently remain in their present inconvenient quarters.

In few places have the health services been provided with funds in excess of the minimal requirements for efficiency, and few reductions of expenditure can be made with safety. These remarks are not made in a spirit of antagonism to true economy, and I agree with the suggestion to save money and labour by cutting out the free milk arrangements from the infant welfare scheme. Let the very poor be referred to public assistance, and let our infant welfare centres remain as educational institutions only. In places in which the inspectors of meat and other foods have had put upon them duties under the Merchandise Marks Acts and the Agricultural Produce (Marking and Grading) Act these duties should now be dropped, for there is no public health function involved. The saving would be slight, but the need for increase of staff would be postponed.

For the next few years annual reports might be reduced to skeleton form and not circulated so widely about the country as at present; informative summaries are usually available in the medical journals A check might be put upon the so-called health education, some of which is costly and of doubtful value. Finally, in most activities we must be content to make progress by tuning up the internal working of the machinery rather than by adding to its size; we must make sure our four cylinders are working well, and defer the purchase of a six-cylinder.

VII.

The two contributions which appeared under this heading last week indicate that considerable advantages should accrue from overhauling the housekeeping. The acid test of expenditure should be whether it is a paying proposition either immediately or in the future. Many schemes are launched in fits of enthusiasm, and are kept going by their own momentum—which means by vested interests or the dislike of dismissing officials—after they have been found not to be socially economical. We must now face conscientiously the rectitude of expenditure.

Personally, I am none too sure about the economic value of prenatal care, although it may be heresy to say so. Infant welfare, on the contrary, calls for ever-increasing activity. But are we quite sure about all the tonsil and adenoid operations? The removal of infected tissue is needed; but is every visible tonsil infected? Attention has already been directed to out-of-date house "disinfection," and drain testing. Let us scrap such routine absurdities.

I welcome the campaign against tuberculosis in so far as it effects isolation or segregation of infectious cases in sanatoria. But evidence is far to seek that in the long run "early" cases treated do any better or worse than untreated cases. Are we quite sure we can justify the expenditure on the campaign? We continue to spend large sums annually in treating bovine tuberculosis in human beings. Why do we not ascertain the total spent, and see whether it would not be enough once and for all to clear tuberculosis from the cattle of these islands? Then we should save these annual sums.

The opinion of a port medical officer on the scientific soundness of quarantine as practised to-day would be of interest. The present economy campaign affords a unique opportunity for bringing the practice of public health up to date.

VIII.

Although the need for economy is so great I find grave difficulties in naming any particular branch of the school medical service in which economy on a large scale could with justice be recommended. Money wisely spent to benefit the health of the children is in itself an economy. But some curtailment of expenditure could be brought about by limiting the number of visits to homes, by avoiding waste in clinics, and by economy in clerical work. Routine inspections should be limited to the three statutory periods of the child's school life. Treatment, especially in county districts, should be transferred to the public health committee. Some of the older schools which are due for replacement will have to be given a new lease of life, and there must be a stay, for the present, in the provision of new special schools, or the extension of existing ones. Care must be taken in the selection of children in need of convalescent treatment; only those who cannot be dealt with at home can be sent away.

Lastly, the money available should be expended on children who can receive benefit and are likely to become useful members of society. There can be no excuse for spending large sums on the mentally defective at the expense of the normal, other than with a view to the prevention of procreation and crime.

MEDICINE AND THE LAW.

Official Records and Professional Secrecy.

In a recent case at the Old Bailey a detective-sergeant had occasion to state what was known about the accused, who had been an officer in the Army. He informed the Court that the accused had been awarded the D.S.O. in 1916 and in March, 1920, had been placed on half-pay owing to ill-health caused by a wound. He said he had been unable to discover from the War Office what the nature of the wound was. The Recorder (Sir Ernest Wild, K.C.) is then reported to have spoken as follows: "Do you mean to say that if a judge wants to know from the War Office what wounds a man has received they will not tell him? If that is so, it should be looked into. If I thought it mattered, I would have the War Office here. See that a communication is sent to the War Office to the effect that assistance should be given in these cases, and not hindrance. Any time a public department refuses information, please apply to the Court and have them subpœnaed to attend to explain their conduct." Subsequently, it appears, the Recorder ordered a subpœna to be served upon the War Office.

Everybody appreciates the humanity of our criminal administration and the patient persistence of judges in discovering whatever may be in favour of an accused person. If any fact is likely to lead either to acquittal or to mitigation of sentence, an accused person may perhaps be assumed to assent to its disclosure. But if such facts relate to a person's diseases or injuries, we trust it will not be taken for granted that any public authority is able to demand the information without question. The medical profession's tradition of secrecy is one of several matters which courts of law refuse to recognise, but which, nevertheless, exist. The duty of secrecy is not abrogated merely because the information is to be found in official records. A man who enters the Army or any other similar public service has just as much right to medical privilege as anybody else. If this were not

true, his medical treatment would be at a disadvantage. Official records are not necessarily public records. Indeed the very existence of extensive official records, as in the case of patients treated under the national health insurance system, makes it proper to take special care that patients can have confidence in non-disclosure. Men and women suffer many disabilities which they do not desire to be broadcast to the world. There is no reason to suppose that officers of the Royal Army Medical Corps are more willing to disclose their patients' confidences than any other members of the medical profession. If, therefore, the War Office was slow to communicate the nature of an ex-officer's injuries there may be more to be said in favour of its hesitation than the Recorder's recent criticisms would appear to concede.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

SCIENTIFIC DISCOVERIES: INTERNATIONAL PUBLICITY.

Dr. L. Rouquès ventilates this problem in the *Presse Médicale* for Sept. 9th, and discusses the proposals made this year in Italy by Prof. E. Levi. The latter takes as his text the discovery, by W. W. Swingle and J. J. Pfiffner, of a new cortico-suprarenal hormone. Working with this substance, L. G. Rowntree and C. G. Greene [1] have shown it to have an action on Addison's disease comparable with that of insulin on diabetes. But a year after Swingle and Pfiffner's work was published, it was still, says Levi, almost unknown, although it promised to save the lives of some 500 to 1000 people every year. In Levi's view the spread of knowledge is delayed by two principal factors. In the first place there may be material difficulties in preparing the remedies and obstacles in the way of quickly collecting enough patients for controlled observation. Secondly, there is the lack of a central international journal enjoying an unquestioned scientific reputation. Levi would like to see a scientific discovery submitted to an authoritative group of experts in the discoverer's country. If they approved, they would transmit it to a central international journal in which it would be published. The international bodies mentioned in this connexion are the Health Section of the League of Nations, the Office International d'Hygiène Publique, and the League of Red Cross Societies. Rouquès is sufficiently interested in this project to discuss it at some length, but he ends by gently pouring tepid water on it.

CONFERENCE ON THE RAT.

On Oct. 7th an international conference on the rat will be held in Paris in connexion with the Colonial Exhibition. This date has been chosen so that the conference may coincide with the autumn session of the Office International d'Hygiène Publique, the delegates to which will be invited to take part in the conference. Between Oct. 7th and 12th there will also be a French colonial congress on the rat and plague, connected, like the international conference, with the Colonial Exhibition. Would-be participants in these meetings should communicate with Prof. Gabriel Petit, 84 bis, rue de Picpus, Paris, XII.

CENTENARY OF FOURNIER.

The syphilographer, Alfred Fournier, was born in Paris on May 12th, 1832, and he died on Dec. 25th, 1914. The centenary of his birth is to be celebrated next year with an international conference on syphilis, from May 9th to 12th. Preparations for this conference are proceeding apace, and the International Union Against Venereal Disease has chosen as one of the principal speakers Mrs. Neville Rolfe, secretary-general of the British Social Hygiene Council. Other speakers will be Prof. Jadassohn, of Berlin, Prof. Wagner von Jauregg, of Vienna, Prof. Nicolau, of Bucarest, and Dr. Cavaillon, of Paris.

DEATH OF DR. CHARLES DUJARIER.

One of the most striking and forceful personalities in the French world of surgery has passed away with Dr. Dujarier, who was born in Paris in 1870. He came under the stimulating influence of Nélaton, Tuffier, and Terrier, and for years he was best known as an anatomist, his book on the anatomy of the limbs being a standard work for several successive classes of medical students. Later, at the Boucicault and the Hôtel-Dieu, he made his reputation as a surgeon, specialising in fractures and the surgery of the bones. Instead of taking a few weeks' holiday before undergoing an operation, he continued to operate himself till the day before his own operation.

[1] See THE LANCET, 1931, i., 652; July 11th, p. 84.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

HOSPITAL SWEEPSTAKES.

IT is reported that Mercer's Hospital, following in the steps of the Rotunda Hospital, has made application to be given a share in the profits of the hospital sweepstakes. The next "sweep" will be held on the Manchester November Handicap, but it is understood that both the hospitals named are too late to share in it, and cannot hope to come in earlier than for a share in the Grand National Sweepstake. With the addition of Mercer's Hospital to those already sharing in the sweepstakes, it would seem that all the general clinical hospitals in Dublin which are eligible are looking to the sweepstakes as a means of support. The managements of the hospitals which have recently joined had, it is understood, little liking for this means of making money, and they have joined from necessity rather than choice. It is not merely that they saw other hospitals receiving sums of money beyond their utmost hopes, but that all other means of support appeared to be vanishing. The success of the sweepstakes, as a means of making money, has rapidly caused a drying-up of the streams of voluntary contributions, and there is much reason to fear that the voluntary principle has become obsolete. Many are asking how its place is to be taken. Sweepstakes can hardly be regarded as more than a temporary method of raising funds, and when they cease the hospitals are likely to be left with greatly increased commitments, and little or no income from voluntary contributions. The community, however, cannot do without hospitals, and probability points to the ultimate necessity of the State taking over responsibility for their upkeep. Whether State support will carry with it complete State control or merely a measure of State supervision remains to be seen.

NATIONAL LYING-IN HOSPITAL, DUBLIN.

Dr. John F. Cunningham has been appointed Master of the National Lying-in Hospital, Dublin, in succession to Dr. P. T. McArdle. Dr. Cunningham is a graduate of the National University of Ireland, and a member of the Royal College of Physicians of Ireland. He has been for some years assistant gynæcologist to St. Vincent's Hospital, Dublin.

THE MEDICAL REGISTER:

UNTRACEABLE PRACTITIONERS IN 1931.

WE are requested by the Registrar of the General Medical Council to publish the following list of medical practitioners who have not replied to his inquiries as to the accuracy of their addresses. Anyone, wherever resident, who finds his or her name included in this list should communicate immediately with the Registrar, 44, Hallam-street, Portland-place, London, W. 1, otherwise the name will be omitted from the next issue of the Medical Register. There may be some who have replied while this list is in the press. The date given is that of registration; the qualification is the principal one registered. The letters (E), (S), and (I) denote registration at the English, Scottish, or Irish Branches respectively; (Col) and (For) denote registration in the Colonial and Foreign lists of the Register. Those marked (S) should communicate direct with the Registrar of the Scottish Branch Council, 12, Queen-street, Edinburgh.

Abdel-Al, Ahmed, M.R.C.S., 1914(E).
Abdoh, Nooman, M.B., 1920(E).
Aberdein-Jones, Charles W., M.B., 1893(S).
Abraham, Cecil, M.R.C.S., 1929(E).
Acheson, Howard W., L.R.C.P., 1881(I).
Adams, Edmund W., F.R.C.S., 1892(E).
Adams, John J., M.D., 1876(I).
Adams, Mary I., M.B., 1917(I).
Adams, Thomas G. D., M.B., 1898(E).
Adams, William I., F.R.C.S., 1912(I).
Adderley, John, M.D., 1874(I).
Addison (Mrs.), Kate, M.B., 1909(E).
Advani, Naraindas T., M.B., 1928(Col).
Agar, Samuel H., M.R.C.S., 1884(E).
Agascar, Madhavrao N., L.M.S., 1916(Col).
Agnesi, Baolo N., M.D., 1925(For).
Agranat, Abraham, M.B., 1921(I).
Ahluwalia, Lachhman S., L.R.C.P.S., 1919(S).
Ahmad, Mumtazuddin, M.R.C.S., 1892(E).
Aiengar, Nuggehalli, M.R.C.S., 1922(E).
Albuquerque, Mary C., M.R.C.S., 1916(E).
Alcorn, John M., L.R.C.P.S., 1905(I).
Alcorn, Robert M., L.R.C.P.S., 1914(I).
Alexander, Henry S. A., M.B., 1914(S).
Alexander, Lewis D., M.B., 1880(E).
Ali, Abdullah, M.R.C.S., 1926(E).
Allan, Alexander, M.B., 1929(E).
Allan, Robert, F.R.C.S., 1925(Col).
Allan, William B., M.B., 1926(E).
Allen, Anna M., L.R.C.P.S., 1925(I).
Allen, Frederick T., M.R.C.S., 1919(E).
Allen, George B., M.B., 1917(I).
Allen, John C. B., M.B., 1925(Col).
Allen, Robert B., L.S.A., 1895(E).
Allen, Stuart D., M.B., 1925(Col).
Allen, William G. E., M.R.C.S., 1915(E).
Allison, Herbert C., M.D., 1920(Col).
Allwood, Stanley G., L.R.C.P.S., 1903(E).
Almond, Robert L., M.B., 1927(Col).
Alper, Minnie, M.B., 1922(E).
Amin, Kashibhai V., L.R.C.P.S., 1905(E).
Amyot, Thomas E., M.B., 1904(E).
Anderson, Charles W. N., L.R.C.P.S., 1908(I).
Anderson, Ewart G., M.B., 1917(E).
Anderson, Francis H., M.B., 1921(E).
Anderson, James, M.B., 1876(E).
Anderson, James, M.B., 1885(E).
Anderson, John T., M.B., 1915(Col).
Andrew, George, F.R.C.S., 1874(E).
Andrew, Philip O., *O.B.E.*, M.R.C.S., 1896(E).
Anklesaria, Kekobad C., M.R.C.S., 1909(E).
Anson, George F. V., M.R.C.S., 1916(E).
Apolito, Nicola, M.D., 1927(For).
Archer, Henry E., M.R.C.S., 1882(E).
Archibald, William C., M.C.P. & S., 1922(Col).
Armstrong, George H. L., M.B., 1920(Col).
Armstrong, Harold G., M.B., 1926(Col).
Armstrong, Margaret M., M.B., 1924(I).
Arnott, Grant, M.B., 1897(E).
Ashe, Patrick, L.R.C.P.S., 1913(I).
Aspinall, Arthur M., M.B., 1913(Col).
Asselstine, Stanley M., M.D., 1920(Col).
Astrof, Samuel, M.C.P. & S., 1923(Col).
Atkins, Charles N., M.B., 1920(Col).
Auchinleck, Hugh A., L.R.C.P., 1875(I).
Auerback, Wolf, M.D., 1926(Col).
Austin, Robert E., M.B., 1928(Col).
Avella, Giuseppe, M.D., 1926(For).
Aymard, John L., M.R.C.S., 1888(E).

Backhouse, Thomas C., M.B., 1920(Col).
Bahl, Manchar L., M.B., 1926(Col).
Bailey, John G., L.A.H., 1914(I).
Bailey, Robert T., *M.B.E.*, M.B., 1915(E).
Baird, John, M.B., 1877(S).
Baldock, Edward H., M.R.C.S., 1891(E).
Ball, Charles R. H., M.R.C.S., 1901(E).
Ball, Leonard H., M.B., 1926(Col).
Balmokand, M.B., 1925(Col).
Banerjee, Charu C., L.M.S., 1921(Col).
Banerjee, Prabodh C., L.R.C.P.S., 1919(E).
Banim, Philip M., L.R.C.P.S., 1924(I).
Bankes, John H., M.R.C.S., 1904(E).
Barber, Halford V., L.R.C.P., 1885(E).
Barclay, Ruth M. C., M.B., 1927(Col).
Bardal, Sigurgeir, M.D., 1918(Col).
Bardhan, Sarojininath, L.M.S., 1919(Col).
Barker, Robert L., B.Chir., 1911(E).
Barker, Valentine H., M.R.C.S., 1923(E).
Barraclough, Robert W. S., M.D., 1867(E).
Barrett, Joseph H., M.B., 1907(I).
Barron, Richard D., M.R.C.S., 1906(E).
Barrow, Ethel, M.B., 1926(E).
Bartlett, George B., M.R.C.S., 1906(E).
Bartlett (Mrs.), Gertrude E., M.B., 1908(E).
Barton, William E., M.D., 1881(E).
Batchelor, Stanley, *M.C.*, M.D., 1914(E).
Bateman, Edgar N., M.B., 1911(I).
Batemar, Samuel, M.D., 1877(I).
Batho, Marion I., L.R.F.P.S., 1911(I).
Bawa, Harnam S., M.B., 1928(Col).
Bayumi, Mahmud, M.R.C.S., 1915(E).
Beale, Alfred G., F.R.C.S., 1885(E).
Bean, John W. B., M.R.C.S., 1907(E).
Bearman, George P., M.C.P. & S., 1916(Col).
Beasley, Henry C., L.R.C.P.S., 1893(I).
Beattie, Ivor H., L.M.S.S.A., 1916(E).
Beatty, John E., M.B., 1925(I).
Beatty, Joseph, F.R.C.S., 1869(I).
Beith, Bruce M., M.B., 1919(Col).
Bekker, Frans W., M.R.C.S., 1922(E).
Bell, Christopher H. C., M.D., 1919(Col).
Bell, Helen Y., M.B., 1924(Col).
Bennett, Alfred H., M.B., 1891(E).
Bennett, Thomas D., M.B., 1919(Col).
Bennetts, Charles S., M.B., 1891(E).
Benson, Eric J., L.R.C.P.S., 1921(I).
Benton, Austin L., M.B., 1902(E).
Bergman, George C., L.R.C.P.S., 1926(S).
Berkowitz, Abraham B., M.B., 1925(E).
Bermingham, Hubert J., L.R.C.P.S., 1925(I).
Berry, Sir George A., M.B., 1879(E).
Bertapelle, Urbano, M.D., 1927(For).
Bery, Raj N., M.R.C.S., 1927(E).
Bettington, Reginald H. B., B.M., 1926(E).
Betzner, Norman F., M.B., 1917(Col).
Bevan-Jones, John, M.D., 1923(E).
Bhagvat, Shandar S., M.B., 1920(Col).
Bhajekar, Madhav V., L.M.B., 1929(E).
Bharucha, Behram B., L.R.C.P.S., 1903(S).
Bibby, William A., L.M.S.S.A., 1917(E).
Bidwell, Lawrence, M.R.C.S., 1886(E).
Bigham, John S. F., M.C.P. & S., 1924(Col).
Bilimoria, Dhanjisha P., M.B., 1924(Col).
Bindman, Gerald, M.R.C.S., 1926(E).
Birch, Hugh M., M.R.C.S., 1925(E).
Birdsall, William W., M.D., 1919(Col).
Birkenstock, Evert F., L.R.C.P.S., 1920(E).
Birmingham, William P., M.D., 1888(I).
Black, Boris, M.D., 1921(Col).
Blackburn, John H., L.R.C.P.S., 1918(S).
Blackstone, Leslie, M.R.C.S., 1928(E).
Blair, William W., M.B., 1915(I).
Blake, Henry E., M.R.C.S., 1929(E).
Blakemore, Benjamin, M.R.C.S., 1885(E).
Blanchard, David F., L.R.C.P.S., 1894(S).
Blanchard, Robert J., M.B., 1877(S).
Blathwayt, Arthur de V., M.R.C.S., 1902(E).
Blaze, John R., M.B., 1924(Col).
Bleakley, Nancy E., M.D., 1921(E).
Blumberg, Henry D., L.R.C.P.S., 1891(E).
Boardman, Edith, L.S.A., 1891(E).
Bodas, Narayan M., M.B., 1922(Col).
Boddington, Charles B., M.B., 1929(Col).
Bodman, John F. O., M.B., 1926(E).
Bogan, James H., L.R.C.P., 1888(I).
Bolger, James T., L.R.C.P., 1882(I).
Bolger, Patrick T., F.R.C.S., 1887 (I).
Bolt, Francis E., M.B., 1927(Col).
Bolton, Dorothy, M.B., 1927(E).
Bond, Charles S., M.B., 1895(E).
Bonney, Henry C., M.B., 1925(S).
Booth, Leonard H., M.B., 1920(Col).
Booysen, Martinus G. J., M.B., 1927(I).
Borrello, Francesco P., M.D., 1927(For).
Bosco, Francesco, M.D., 1928(For).
Bosson, George A., M.B., 1902(E).
Bott, William G., M.R.C.S., 1874(E).
Bouchier-Hayes, Henry, L.R.C.P.S., 1892(I).
Bourke, Ulick J., L.R.C.S., 1876(E).
Bousfield, Leonard, M.R.C.S., 1902(E).
Boutflower, Andrew, M.R.C.S., 1891(E).
Bowie, Edgar O., L.A.H., 1914(I).
Boyce, Jeremiah, L.A.H., 1914(I).
Boyd, Alan J. S. L., M.R.C.S., 1924(E).
Boyd, John E., M.B., 1924(I).
Boyle, Cornelius C., M.B., 1914(I).
Boyle, Michael J., M.B., 1925(I).
Boyle-Kelly, Louise M., M.B., 1924(I).
Bracken, George, M.B., 1889(I).
Braddon, Paul D., M.B., 1926(E).
Bradley, Clement H. B., M.B., 1908(Col).
Bradley, James, M.D., 1886(I).
Bradley, Michael, L.R.C.P.S., 1918(I).
Braganza, John V., L.M.S., 1923(Col).
Bray, John S. B., M.R.C.S., 1929(E).
Brennan, James H., L.R.C.P., 1876(I).
Brentnall, Thomas C., M.R.C.S., 1911(E).
Brewer, Frederick H. W., L.M.S.S.A., 1910(E).
Brewis, Andrew S., *O.B.E.*, M.B., 1887(E).
Bridgman, Roger Orme, M.R.C.S., 1912(E).
Briggs, Christopher D., M.R.C.S., 1881(E).
Brink, Cyril D., M.B., 1919(I).
Briscoe John F., M.R.C.S., 1880(E).
Brito-Mutunayagam, Michael A. B., M.R.C.S., 1924(E).
Brittain, Mabel E., M.B., 1926(I).
Broderick, Maurice J., L.R.C.P.S., 1917(I).
Brody, Hyman P., M.R.C.S., 1919(E).
Brosnan, Michael J., M.B., 1928(I).
Brown, Abraham S. S., M.R.C.S., 1925(E).
Brown, David, M.D., 1889(E).
Brown, Miles G., M.B., 1919(Col).
Brown, Samuel S., M.B., 1923(I).
Brown, Wilbert H., M.R.C.S., 1927(E).
Browne, Patrick F., M.B., 1924(I).
Bruni, Filippo, M.D., 1927(For).
Bryant (Mrs.), Ivy E., M.R.C.S., 1928(E).
Bryson, Alexander C., *M.C.*, M.B., 1906(E).
Bucknill, Charles E. R., L.M.S.S.A., 1894(E).
Budd, Herbert H., L.M.S.S.A., 1911(E).
Bull, Joshua E., L.R.C.P., 1898(S).
Burden, Alexander J., M.B., 1928(I).
Burnier, Michael H., M.R.C.S., 1919(E).
Burrows, Thomas E., M.D., 1887(E).
Bush, John D., F.R.C.S., 1866(E).
Button, Horace G., M.R.C.S., 1872(E).
Byrne, Patrick J., M.B., 1919(I).
Byrne, Patrick J., M.B., 1926(I).

Cagney, Patrick, *M.C.*, M.B., 1913(I).
Cameron, Andrew A., M.D., 1920(Col).
Cameron, Harold D., F.R.C.S., 1925(Col).
Campbell, Harry, M.D., 1882(E).
Cannon, Richard, L.R.C.P., 1862(I).
Cantor, Stanley J., M.B., 1920(Col).
Capaldo, Francesco, M.D., 1927(For).
Caraher, Michael A. J. J. M., L.R.C.P.S., 1896(I).
Carey, John T., M.B., 1875(E).
Carmichael, Malcolm A., M.D., 1919(Col).
Carr, Peter, M.B., 1924(I).
Carroll, James F., M.B., 1893(I).
Carruthers, Bruce M., M.B., 1915(Col).
Carson, Henrietta, L.R.C.P.S., 1926(I).
Carter, Harold C. R., F.R.C.S., 1928(Col).
Carthew, Morden, M.D., 1899(E).
Carton, Paul P., M.D., 1896(I).
Caruth, John, M.B., 1918(I).
Cascaden, John H., M.R.C.S., 1914(E).
Casey, Hanora, M.B., 1925(I).
Cashel, Edward B., F.R.C.S., 1882(I).
Cassar, Albert, M.D., 1907(Col).
Cataldi, Michele, M.D., 1926(For).
Catchlove, Sydney G. L., M.D., 1914(Col).
Cattanach, Angus M., L.R.C.P., 1882(S).
Cerswell, William A., M.R.C.S., 1902(E).
Chacin-Itriago, Luis G., M.R.C.S., 1915(E).
Challenger, Neville E., L.M.S.S.A., 1925(E).
Champion, Charles G., M.B., 1928(Col).
Champion, Rachel, M.B., 1916(Col).
Chan, Sze Pong, M.B., 1907(E).
Chapman, Louis D., M.C.P. & S., 1924(Col).
Charbonneau, Eugene, M.D., 1924(Col).

Charlton, George A., M.C.P. & S., 1918(Col).
Chatterji Karuna K., F.R.C.S., 1907(Col).
Chaudhri, Jatindra N., L.M.S., 1925(Col).
Chaudhuri, Abani M., F.R.C.S., 1928(E).
Chesnaye, Francis W., L.S.A., 1889(E).
Chesshire, Arthur E., M.R.C.S., 1880(E).
Cheua, Nai, M.R.C.S., 1919(E).
Chhachhi, Harnam S., F.R.C.S., 1928(Col).
Chit Tway, M.B., 1927(Col).
Chock, King Chee, L.M.S.S.A., 1923(E).
Chopra, Soudagar C., M.B., 1927(Col).
Church, Charles H., L.S.A., 1897(E).
Churchill, Theophile G., M.B., 1926(E).
Cittadini, Antonio, M.D., 1911(For).
Clancy, Gordon S., M.D., 1919(Col).
Clare, Arthur M., M.D., 1921(Col).
Clark, Leighton M., M.R.C.S., 1926(E).
Clarke, Percival E. M., M.B., 1929(I).
Clarke, Thomas, M.D., 1872(E).
Clarke (Mrs.), Violet G. S., M.B., 1909(E).
Clarkson, Ernest R. T., M.R.C.S., 1914(E).
Clegg, Edwin A., M.R.C.S., 1918(E).
Cleghorn, Irving M., M.B., 1922(Col).
Clothier, Walter J. K., M.B., 1927(Col).
Codrington, John F., M.R.C.S., 1868(E).
Coffey, Thomas, L.R.C.P.S., 1919(I).
Cohen, David, M.B., 1926(E).
Colahan, Nicholas W., M.D., 1874(I).
Coleman, Michael, L.R.C.P.S., 1922(I).
Coll, Charles J., M.B., 1922(I).
Collins, Frederick M., M.B., 1922(E).
Colwell, Alan R., M.B., 1925(Col).
Connan, Peter, F.R.C.S., 1923(E).
Connell, John, L.R.C.P., 1886(I).
Connolly, Thomas J., L.R.C.P., 1892(E).
Connor, John, M.B., 1928(I).
Conroy, Herbert J., M.C.P. & S., 1918(Col).
Conyngham, Henry F., L.R.C.P.S., 1896(I).
Cordingley, Grace M., L.M.S.S.A., 1913(E).
Cormack, Thomas P., L.R.C.P.S., 1908(I).
Cornwall, William D., M.B., 1919(Col).
Corp, Annie A., M.B., 1926(E).
Costelloe, Joseph, L.R.C.S., 1887(I).
Cottew, Arthur A., L.R.C.P., 1882(I).
Coulter, Cameron T., M.C.P. & S., 1916(Col).
Cousineau, Jean, M.D., 1924(Col).
Couture, Louis P., M.D., 1921(Col).
Crahay, Pierre, M.D., 1918(For).
Craib, William H., B.Chir., 1924(E).
Craig, Elizabeth, M.B., 1919(I).
Cramsie, Jack H., F.R.C.S., 1923(Col).
Crawford, Bridget, L.R.C.P.S., 1927(I).
Crawford, John A., M.B., 1916(S).
Crawley, Frank H. M. C., M.B., 1896(I).
Creighton, Anna St.C., M.D., 1923(Col).
Cronhelm, Theodore A., L.R.C.P.S., 1924(I).
Cronin, Dennis, M.B., 1922(I).
Crossette-Thambiah, Rajaratnam W., L.R.C.P.S., 1928(E).
Crowe, John J., L.A.H., 1919(I).
Crowley, Joseph, M.D., 1879(I).
Crowley, Vivian G., L.M.S.S.A. 1926(E).
Crowther, William E. L. H., M.B., 1911(Col).
Culbertson, Norman E., M.B., 1927(Col).
Cuppaidge, Godfrey O., L.R.C.P., 1884(I).
Curtis, John C. R., L.S.A., 1898(E).
Curtis, Percy J., M.R.C.S., 1899(E).
Cusack, Roderick M., L.R.C.S., 1882(I).
Cuttle, Ronald, M.B., 1923(Col).

Dadabhoy (Mrs.), Dossibai J. R., M.D., 1911(Col).
Dalal, Rantansha D., M.R.C.S., 1895(E).
Dalal, Shridhar D., M.B., 1927(E).
Daly, Timothy, L.R.C.P., 1875(E).
Daly, Ulick A., M.B., 1878(I).
Daly, William, L.R.C.P.S., 1896(I).
Danby (Mrs.), Gladys, L.M.S.S.A., 1927(E).
D'anna, Antonino, M.D., 1929(For).
Dannatt, Robert M., M.R.C.S., 1915(E).
Darling, Bessie P., F.R.C.S., 1928(Col).
Davel, Johannes G. A., B.M., 1927(E).
David, Sebastian E., L.A.H., 1909(I).
Davidson, Percy T., M.R.C.S., 1921(E).
Davies, Hector W., M.R.C.S., 1913(E).
Davies, Thomas L., B.M., 1926(E).
Davis, Aaron, L.M.S., 1925(Col).
Davis, Daniel L., M.B., 1921(Col).
Davis, Frederick A. G., M.D., 1885(I).
Day, James D., M.B., 1879(I).
Dearden, John R. B., M.B., 1924(E).
Debenham, Robert B., M.R.C.S., 1890(E).
De Capite, Antonio, M.D., 1928(For).
Decosse, Joseph P., M.D., 1919(Col).
Delaney, Patrick J., M.B., 1917(I).
Dello Jacono, Biagio, M.D., 1927(For).
De Mel, Ernest L. F., L.M.S., 1927(Col).
Densham, Ashley B., M.R.C.S., 1903(E).
Denton, George, M.B., 1922(E).
Denton-Fethers, Percy, L.R.C.P.S., 1893(E).
Derrick, Edward H., M.B., 1922(Col).
De Silva, Charles E., M.D., 1891(E).
Devenish-Meares, Archibald L., M.R.C.S., 1889(E).
De Villiers, Bernardus J. Van de Sandt, M.B., 1925(E).
de Villiers, Izak F. A., M.B., 1922(I).
de Villiers, James H., M.R.C.S., 1896(E).
de Villiers, Willem F., M.B., 1928(E).
Devlin, John J. M., M.B., 1924(I).
Devonald, Alfred E. L., L.M.S.S.A., 1911(E).
Dhingra, Behrai L., M.R.C.S., 1895(E).
Dick, Harriet M., M.B., 1926(E).
Dillon, Michael J., M.B., 1923(I).
Di Marca, Guiseppe, M.D., 1926(For).
Dinnick, Oswald T., F.R.C.S., 1910(E).
Dippenaar, Michael C., M.B., 1917(I).
Divecha, Kaikhosroo R., L.R.C.S., 1880(E).
Dixon, Henry C., M.R.C.S., 1882(E).
Dobbin, Francis W., M.B., 1891(I).
Docherty, John F., M.B., 1920(Col).
Dodd, John, M.D., 1892(I).
Dodds, Tessie E., M.R.C.S., 1929(E).
Donaldson, Alexander H., M.R.C.S., 1903(E).
Donegan, Joseph F., M.B., 1916(I).
Donelan, Joseph O'C., L.R.C.P., 1887(E).
Donnellan, Patrick, L.R.C.P., 1880(I).
Donnellan, William, M.B., 1918(I).
Donovan, Denis D., L.R.C.P., 1870(E).
Dooley, Annie, M.B., 1916(I).
Dorsch, Carl E., M.B., 1922(S).
Dorset, Richard, L.R.C.P.S., 1914(S).
Doyle, Honoria J., M.B., 1923(I).
Dreadon, John, M.B., 1923(Col).
Drew, Thomas M., M.B., 1905(Col).
Drummond, James H. G., L.R.C.P., 1876(E).
Drysdale, John H., M.B., 1889(E).
Dube, Joseph A., L.M.S., 1926(Col).
Duggan, Daniel, M.B., 1926(I).
Duggan, Marjorie M., M.B., 1926(E).
Duncan, James, L.R.C.P.S., 1889(S).
Duncan, John A. A., *M.C.*, L.R.C.P.S., 1920(E).
Dunlop, James P., M.B., 1925(S).
Dunne, John, M.B., 1922(I).
Du Plessis, Pieter C., M.B., 1923(I).
Dupont, Louis A., M.D., 1922(Col).
Duskes, Emile, M.D., 1925(Col).
D'Vaz, Mary J., M.B., 1900(E).
Dwyer, Patrick J., M.B., 1906(I).
Dwyer, Thomas R., M.D., 1919(Col).
Dwyer, William C., L.R.C.P.S., 1921(I).
Dyas, Albert E., L.R.C.P., 1887(I).
Dyet (Mrs.), Mary E., M.B., 1922(S).
Dyma, Bronislaw, M.D., 1923(Col).
Dysart, Elizabeth, M.B., 1922(E).

Eardley-Wilmot, Robert, M.B. 1871(E).
Earle, Allan B., M.D., 1918(Col).
Eddowes, William, M.R.C.S., 1861(E).
Edgar, Peter G., M.B., 1894(E).
Edwards, David R., M.R.C.S., 1899(E).
Edwards, Frank P., M.B., 1900(E).
Edwards, William A., M.B., 1915(E).
Egan, James F. X., M.B., 1926(I).
Egan, John P., L.R.C.P.S., 1927(I).
Eid, Mohamed H., L.M.S.S.A., 1921(E).
Ekstein, Lambertus L., M.R.C.S., 1928(E).
El-Din, Mohammed Nour, M.R.C.S., 1927(E).
Eliason, Joseph E., M.B., 1923(I).
El Kirdany, Aly M., M.R.C.S., 1920(E).
Ellam (Mrs.), Mary M., M.B., 1923(E).
Ellis, Joseph W., M.D., 1877(E).
El-Makkawi, Mohammed M., L.R.C.P.S., 1925(E).
Elmes, John H., L.R.C.P.S., 1892(I).
El Shurbagi Abdel-Kader H., M.R.C.S., 1925(E).
Elsohn, John, M.B., 1922(E).
Elwood, John R., L.A.H., 1915(I).
Emery, Arthur, M.B., 1892(E).
Evans, Alfred F., M.B., 1924(I).
Evans, Herman, M.R.C.S., 1923(E).
Everill, Sydney F. H., L.R.C.P.S., 1906(S).
Ewing, Thomas, M.B., 1915(Col).

Feilchenfeld, Edward, M.B., 1902(Col).
Fernando, Andrew C., L.M.S., 1921(Col).
Fieldman, Joseph D., M.D., 1922(Col).
Figini, Carlo, M.D., 1910(For).
Finlay, Donald F., M.B., 1915(Col).
Finselbach, Frederich W. A., M.B., 1923(Col).
Fisher, John A., M.B., 1927(I).
Fitzgerald, Gerald P., M.B., 1920(Col).
Fitzgerald, Robert S. J., F.R.C.S., 1921(Col).
Fitzgerald, William D., M.B., 1921(Col).
Flament, Laurent J. C., M.D., 1915(For).
Flegg, Robert F., M.C.P. & S., 1918(Col).
Fletcher, Duncan A., M.C.P. & S., 1922(Col).
Fletcher, Marwood D., M.D., 1924(Col).
Forgrave, William D., M.B., 1923(I).
Fossey, Ernest S., M.B., 1927(Col).
Fraser, Donald T., M.B., 1920(Col).
Frischmann, Paul, M.D., 1928(For).
Frizell, Malcolm, M.B., 1923(Col).
Fukushima (Mrs.), Matsuno, M.B., 1924(For).

Gall, George L., M.D., 1919(Col).
Gandevia, Naoroji B., M.R.C.S., 1884(E).
Gaulin, Eugene, M.D., 1922(Col).
Geddes, William A. S., M.B., 1919(Col).
George, Thomas E., M.B., 1915(Col).
Ghandhy, Sarosh S., M.B., 1925(Col).
Ghows, Ismail M., L.M.S., 1918(Col)
Gilmour, William N., M.C.P. & S., 1917(Col).
Goode, Christina L., M.B., 1901(Col).
Goodridge, Leslie A., L.M.S., 1922(Col).
Gowenlock, David E., M.B., 1929(Col).
Gower, George W., M.B., 1915(Col).
Grant, Alfred A., M.C.P. & S., 1924(Col).
Grant, Roderick W., M.D., 1924(Col).
Graydon, William L., M.B., 1919(Col).
Green, Norman H., M.B., 1924(Col).
Gullison, Frederick E., L.M.S., 1924(Col).
Gupta, Armanath, M.B., 1922(Col).
Gupta, Ishwar S., M.B., 1928(Col).

Hall, John W., M.D., 1923(Col).
Ham, Hendry J. P., M.B., 1929(Col).
Hamelin, Raoul, M.D., 1921(Col).
Hamilton, Reginald H., M.B., 1927(Col).
Hanna, Lloyd M., M.D., 1920(Col).
Harrison, Tillson L., M.C.P. & S., 1923(Col).
Harry, Benjamin H. O., M.D., 1918(Col).
Helston, Gordon E., M.B., 1923(Col).
Henderson, Randolph C., M.D., 1920(Col).
Henderson, William A. L. H., M.B., 1915(Col).
Henry, Willard J., M.B., 1922(Col).
Hershfield, Harry, M.D., 1923(Col).
Hersig, Maximilian L., M.D., 1925(For).
Honey, William B., M.C.P. & S., 1920(Col).
Horn,-Szaja, L.R.C.P.S., 1926(Col).
Hotop, Francis R., M.B., 1905(Col).
Houston, Stuart W., F.R.C.S., 1927(Col).
Hurlimann, Leopold, M.D., 1929(For).

Ireland, Arthur J., M.D., 1922(Col).

Jagger, Thomas R., M.B., 1919(Col).
James, Harold L., M.D., 1911(E).
Jamieson, Elizabeth G., M.B., 1922(S).
Jamieson, James I. M., M.B., 1915(Col).
Jeffreys, Harold E., M.B., 1907(Col).
Johnson, Joseph H., M.B., 1924(Col).
Johnston, Alfred L., M.B., 1926(Col).
Johnston, Arthur C., M.D., 1920(Col).
Johnstone, Charles G., M.D., 1921(Col).
Jones, Lewis, M.R.C.S., 1899(E).
Jones, Reginald S., F.R.C.S., 1928(Col).
Joshi, Shankar P., M.B., 1925(Col).
Joyce, Arthur H., M.B., 1920(Col).
Jutras, Albert, M.D., 1926(Col).

Kacker, Pooran C., F.R.C.S., 1923(Col).
Kay, Alexander D. W., M.B., 1919(Col).
Keenan, Edward, M.D., 1926(I).
Keightley, Archibald, M.D., 1886(E).
Kelly, John, L.R.C.P.S., 1913(I).
Kelly, Thomas F., M.B., 1918(Col).
Kennedy, Robert B., M.B., 1919(Col).
Khanna, Manmohan N., M.B., 1927(Col).
Kharegat, Sorab M., M.B., 1926(Col).
Khatri, Lachman D., M.B., 1927(Col).
King, Edgar S. J., M.B., 1927(Col).
Kirkland, Keith L. H., M.B., 1928(Col).
Kirkup, Norman N., M.B., 1926(Col).
Kirwan, Philip A., M.D., 1922(Col).
Knight, Glen A., M.B., 1897(Col).
Knox, Arthur W., M.B., 1916(Col).
Kraminsky, Samson, M.D., 1919(Col).

Lafleur, Charles E., M.D., 1924(Col).
L'Africain, Eugene, L.C.P. & S., 1924(Col).
Lalonde, J. Leo, M.D., 1922(Col).
Lamort, Robert, L.M.S.S.A., 1928(E).
Lane, Muriel S., M.B., 1924(Col).
Leckie, George C., M.D., 1924(Col).
Lee, Alfred W. H., L.R.C.P., 1882(E).
Lehman, Ethan J. M., M.B., 1921(Col).
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Lussier, Arthur, M.D., 1925(Col).
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McKay, William J., M.B., 1891(Col).
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MacQueen, Malcolm D., M.B., 1922(Col).
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Maher, Adrian O., M.B., 1929(Col).
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Marcy, William J. M., M.C.P. & S., 1916(Col).
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Martin, Robert B., *M.C.*, M.D., 1916(Col).
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Mavety, Alberta F., M.B., 1915(Col).
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Mitchell, Norman H., M.B., 1921(Col).
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Nash, Horace W., M.B., 1925(Col).
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Neal, Leo A., M.B., 1922(Col).
Nelson, William T., M.B., 1922(Col).
Nirula, Pearcey L., M.B., 1927(Col).
Nodwell, George R., M.B., 1923(Col).
Norris, William P., M.D., 1914(Col).

O'Connor, Henry M., M.B., 1929(Col).
O'Hanlon, Kevin C., M.B., 1927(Col).
O'Neill, John J., M.B., 1915(Col).
O'Regan, John A. R., M.B., 1929(Col).
O'Sullivan, Timothy J., M.D., 1926(Col).

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Pain, Albert, M.B., 1920(Col).
Pandit, Chintaman G., M.B., 1922(Col).
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Pandit (Miss), Sharadabai G., M.B., 1924(Col).
Pandit, Sudershun H., L.M.S., 1924(Col).
Parmanand, L.M.S., 1920(Col).
Patil (Mrs.), Krishnabai R., M.B., 1925(Col).
Patney, Brij L., M.B., 1927(Col).
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Penny, Harold A., M.B., 1915(Col).
Perera, Clement O., L.M.S., 1924(Col).
Petherbridge, Walter C., M.B., 1924(Col).
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Pfeiffer, Gordon H., F.R.C.S., 1921(Col).
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Phillips, Thomas G. W., M.B., 1923(Col).
Pichaimuttu, Annie, M.B., 1922(Col).
Pilkey, John H., M.D., 1923(Col).
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Plourde, Wilfrid A., M.D., 1922(Col).
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Ravary, Pierre W., M.D., 1923(Col).
Ray, William, M.B., 1912(Col).
Reay, Edgar R., F.R.C.S., 1924(Col).
Reed (Mrs.), Lilian R. G., M.B., 1924(Col).
Rege, Krishnarao Y., M.B., 1927(Col).
Rego, Joseph, M.B., 1923(Col).
Reubens, Adeline, M.B., 1920(Col).
Rich Vivian M., M.B., 1912(Col).
Richardson, Richard N. C., M.B., 1921(Col).
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Rosebv, Edmund R., M.B., 1905(Col).
Roshan, Lal K., F.R.C.S., 1924(Col).
Roy, Almanzor, M.D., 1921(Col).
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Sathe, Vinavak L., F.R.C.S., 1915(Col).
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Savige, Harold W., M.B., 1929(Col).
Sayers, Edward G., M.B., 1926(Col).
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Scott, David E., M.D., 1916(Col).
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Shanker, Rama, M.B., 1929(Col).
Sharp, Fletcher B., M.D., 1919(Col).
Sharpe, James H., M.B., 1920(Col).
Shellshear, Cyril, M.B., 1907(Col).
Sheppard Richard J., M.B., 1923(Col).
Shiveshwarkar, Ramochandra V., M.B., 1913(Col).
Silverman, Abraham H., L.R.C.P.S. 1911(S).
Silverman, Isaac J., M.B., 1927(Col).
Silverton, Robert J., M.B., 1919(Col).
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Singh, Balwant, L.M.S., 1928(Col).
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Singh, Narain, M.B., 1928(Col).
Singleton, Omer H., M.C.P. & S., 1918(Col).
Slocombe, George W., M.B., 1922(Col).
Smellie, William B., M.B., 1925(S).
Smith, Andrew H. C., M.C.P. & S., 1920(Col).
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Smith, Gerald K., M.B., 1911(Col).
Smith, John K., M.B., 1914(S).
Smith, Pierre, M.D., 1923(Col).
Snowdowne, Cecil H., M.B., 1924(S).
Sommerville, Andrew N., M.D., 1919(Col).
Sondhi, Sundar D., M.B., 1922(Col).
Souter, James, M.B., 1902(S).
Spencer, William M., M.B., 1926(Col).
Sponagle, John A., M.D., 1919(Col).
Stancliff (Mrs.), Isabella M., M.B., 1916(S).
Steel, William H., M.B., 1898(S).
Stephen, Edgar H. M., M.B., 1904(Col).
Stephens, John G., M.B., 1926(Col).
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Stewart, Frank J., M.D., 1917(Col).
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Stobo, Alexander J. H., M.B., 1923(Col).
Stokes, Harry L., M.B., 1924(Col).
Stone, Francis W., M.B., 1918(Col).
Strang, Thomas M., M.B., 1926(S).
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Sumner, Donald J. R., M.B., 1923(Col).
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Talib, Syed A., M.B., 1925(Col).
Tandon, Raj N., M.B., 1928(Col).
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Teitelmann, Meyer, M.B., 1912(S).
Terrey, Hedley, M.B., 1914(Col).
Teskey, Luke, M.B., 1924(Col).
Thomas, Harold W., M.D., 1909(Col).
Thompson, Brian G., M.D., 1922(S).
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Thyer, Frederick L., M.B., 1924(Col).
Tilak, Hari V., M.B., 1920(Col).
Totton, Charles R., M.B., 1917(Col).
Trilokekar, Hira M., M.B., 1925(Col).
Trumble, Hugh C., M.B., 1920(Col).
Tucker, Clifton E., M.B., 1915(Col).
Tucker, Maxwell K., M.B., 1928(Col).
Tudehope, Claude B., F.R.C.S., 1910(S).
Tuli, Ram L., M.B., 1928(Col).
Tutt, William R., M.B., 1915(Col).

Ukil, Amulya C., M.B., 1929(Col).

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Vettivalee, Marimuttu, L.M.S., 1921(Col).
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Wahid, Abdul, M.B., 1927(Col).
Waite, James, M.D., 1920(Col).
Wald, Orlando E., M.C.P. & S., 1923(Col).
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Wallace, Henry C., M.C.P. & S., 1919(Col).
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Warden, Pestonji B., M.B., 1929(Col).
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Williams, Louis E., M.D., 1919(Col).
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Wilson, Laurence A., M.B., 1921(Col).
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Woodside, Harold A., M.D., 1919(Col).
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Wunderly, Harry W., M.B., 1925(Col).

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PANEL AND CONTRACT PRACTICE

HEALTH INSURANCE IN FRANCE.

THE ACT OF JULY, 1930.

THE new system of health insurance set up by the law which passed the Chamber of Deputies last year falls into three parts: the main scheme, the scheme for agricultural workers, and the voluntary scheme. The two latter were necessitated by the peculiar conditions of France as a largely agricultural country; the agricultural benefits are the same as those in the general scheme, but the worker has to make a smaller contribution and the State a larger one, and there are certain other modifications relating to the position of the agriculturist. The voluntary scheme is designed to take in the many small-holders, small shopkeepers, and family farmers who do not receive wages; they can obtain the benefits at the same income limits as employees at a contribution varying with the risks they wish to cover. There is also a special voluntary scheme for non-wage-earning wives of insured men.

Provisions of the Act.

The main scheme makes insurance compulsory for all wage-earners of either sex under the age of 60 if the total annual income is not more than 15,000 fr.; this maximum wage-limit is increased to 18,000 fr. in towns of more than 200,000 inhabitants and in certain industrial areas to be specified by the Ministry of Labour, and is further increased by 2000 fr. for one dependent child, by 4000 fr. for two children, and by 7000 fr. for three or more children. A "dependent" child is one between 6 weeks and 16 years of age who is not earning and who is brought up at the expense of the insured person; it may be legitimate, natural, acknowledged, adopted, or foundling. Insured persons are divided into five wage-classes, to each of which is allotted a "basic" or mean wage figure, the lowest being 6 fr. per day and the highest 36 fr. The contribution of the insured and the employer is equal, and is in principle fixed at 10 per cent. of the basic wage, but in practice it is to remain at 8 per cent. until 1934 and at 9 per cent. from 1934 to 1940. The employer has in addition to pay a contribution (4 per cent. of the basic wage at present) for those of his employees who are too old to become insured, and a special contribution for every wage-earner whose remuneration exceeds the maximum limit but is below 25,000 fr. a year. The State provides a subsidy consisting of its liability under the Workers' and Peasants' Pensions Act (540 million francs a year) and an additional payment, estimated at 100 million francs a year, to guarantee the minimum old age pensions for persons who were between 60 and 65 when the Act came into force. The scheme also derives income from an appropriation from the State duty paid by the Bank of France and from the gambling tax; from the savings effected in expenditure on public assistance, and from fines, gifts, and legacies.

Special insurance schemes were previously in existence for employees of the State and public undertakings, railway and tramway workers, miners, slate quarrymen, registered seamen, and certain others. These are at present excluded from the new legislation, but their system is to be coördinated with the general system.

Persons who are normally employed for less than 90 days in the year are excluded but, since there is no fixed lower age-limit, all children employed for wages come under the scheme. To obtain benefits, the insured person must have paid the statutory contributions for 60 days during the two months, or 240 days during the 12 months preceding the claim. Accidents and occupational disease are not covered, as Acts relating to these were previously in operation. The majority of employers raised the wages sufficiently to cover the worker's contribution when the Act came into force.

Benefits.

The Act envisages a complete system of insurance, including sickness, maternity, disability, old age, and death, but at present only the sickness and maternity schemes are in force. The sickness benefits are in cash and in kind. Benefits in kind constitute reimbursement of a recognised percentage—80 or 85, according to wage-class—of the cost of medical care and drugs, and are paid to the insured person for himself, for his wife, and for dependent children. Hospitalisation charges are paid direct to the institution if it is one with which the caisse (sick-club) has made a contract. Benefits in kind are paid from the onset of illness, but the cash benefit starts from the sixth day of illness—thus relieving the caisse from the burden of minor maladies. It is paid from the fourth day if the insured person has three or more dependent children, and the sum allowed is increased by a franc a day for each dependent child. The cash benefit is only paid to the insured person himself and not to his wife or family, and it amounts to half the basic wage of his category; it is only paid for working days, not for Sundays or holidays. If he is ill for more than 15 days the caisse will pay for him half the contribution that he ought to be making towards his old age insurance. The cash benefit is, of course, reduced if a patient is in hospital, but the reduction varies with the number of children he has. Sickness benefit lasts for six months, and if a patient is ill longer than that he will eventually come under the disability insurance, provided his working capacity is reduced by two-thirds. This will allow him a pension of 40 per cent. of his average annual wage for five years, after which his condition will be reviewed and the pension may be made permanent. Unfortunately, since this system is not yet in force, the sick person is at present left completely stranded at the end of six months, and there is some reason to think that the condition of tuberculous patients, for instance, is pitiable at the present time. On the other hand, they cannot be worse off than they were before the law was passed.

The pregnant woman also receives benefits in cash and in kind. The cash benefit amounts to 50 per cent. of her basic wage for six weeks before and six weeks after delivery, provided that she undertakes to do no wage-earning work during this period. The wife of an insured man receives the benefits in kind—reimbursement of cost of midwife, doctor, and drugs—but not the cash. Both classes of women have a nursing allowance for feeding their own children: 150 fr. a month for the first four months, 100 fr. a month for the next two months, and 50 fr. a month for the subsequent three months. If a woman is certified by a doctor as unfit to feed her child she can receive milk vouchers of which the value must not exceed two-thirds of the nursing benefit. To obtain these allowances she must attend regularly at an infant welfare centre or at a doctor's consulting-room.

Administration: the Caisses.

The scheme falls under the supervision of the Ministry of Labour and all questions relating to the working of the Act are entrusted to the Superior Council of Social Insurance. Disputes among societies, insured persons, and doctors relating to sickness insurance are submitted to a technical medical commission consisting of a practising doctor, a doctor chosen by the juge de paix, and a third doctor chosen by the insured person or the society, as the case may be; where the question is one of permanent incapacity the third doctor will be a referee appointed by the President of the Civil Court. Questions outside the competence of the medical commission are judged by a cantonal

Commission consisting of the juge de paix, an employer, and an insured person, assisted by the clerk to the judge. Contracts and scales of fees are considered by departmental tripartite commissions consisting of representatives of caisses, syndicats, and the Ministry. Appeals can be made from their decision to the Superior Council.

As in other countries, there existed a number of mutual societies before this Act was mooted; these had been formed by employers, trade-unions, or groups of workers. They are now absorbed into the system as "caisses," under certain legal regulations and State supervision. New ones can only be formed by permission. They are known as primary caisses, and are administered by a committee of management of the organisation which founded them; this committee must contain at least two practitioners—doctors, chemists, midwives, or dentists—chosen from a list submitted by the appropriate syndicat, at least six employers and at least seven insured persons. For workers who were not enrolled in a primary caisse already, the Act provided departmental and interdepartmental caisses governed by committees of similar constitution. At present some of these departmental caisses have an enormous roll of membership, but the mutual societies believe that they will take members away from them in time; the mutual caisse offers certain definite advantages, such as larger reimbursement than the law allows and also a saving to the insured person of a great deal of trouble with forms and applications.

The central office of the caisse makes an alphabetical list of insured persons in its area, arranges for a representative to be readily available in every district to explain to and help the members, keeps some kind of record of the medical history of each member, and makes contracts with local syndicats and hospitals to ensure sickness benefits for its members. Model contracts were agreed between the Government and representative bodies in the first place, and on this basis the local contracts are drawn up with bodies representing not only the doctors, but also chemists, herbalists, dentists, and midwives. A doctor who does not belong to a syndicat can, nevertheless, coöperate if he notifies the caisse that he will accept the conditions made between it and the syndicat.

The caisse also appoints a control medical officer, who is preferably a whole-time servant, retired from practice, though in some instances he is allowed to continue private practice provided he does not take insured patients. His duty is to check abuses by the insured, who must not object to his visits or inquiries; they can, however, insist on being examined in the presence of their own doctor. In some districts the control officer visits patients at their homes, but in most places he sits at the office of the caisse and summons patients to see him there. Sometimes he has one or more nurses or unqualified visitors to attend at the patient's home and submit a report. He also receives reports from specialists when special services are required for members of his caisse. He has the obvious general duty of seeing that the caisse is not involved in any unjustified expenditure. There seems to be complete absence of friction between the control doctors and the general practitioners.

All benefits are suspended if the insured person refuses the control of the caisse or fails to receive the caisse's visitor. Cash benefits are suspended in whole or in part to any patient who seriously disobeys his doctor's orders. Cash benefits are not paid if the illness is the wilful fault of the patient, but benefits in kind are available until he is cured.

Tariff of Liability.

There is in France no capitation rate for medical services; the fees are fixed according to certain related tariffs. Tariffs of medical charges, varying slightly with the district but otherwise standardised, had been drawn up by the confederation of syndicats before the Act was contemplated. These tariffs were not always enforced, even to those who could afford them, and, of course, there was a great deal of reduction and free service for the poor. Nevertheless, they constituted a standard of what the doctors thought they ought to be paid for any given service. For instance, a simple consultation, including a hypodermic injection or a minor dressing, would be charged 25 fr. All the possible services were put into "categories," each category having an appropriate fee. Services rendered by the general practitioner fell into 14 categories, from the simple consultation in Category I. at 25 fr. to Category XIV.—twin accouchement or forceps—at 1200 fr. Specialist services were grouped in 17 categories, and the price relating to each category varied according to whether the patient preferred to pay an inclusive fee for the operation and subsequent dressings or other attention, or a single fee for the operation, paying separately for any subsequent attendance. While the doctors took their stand on this tariff, the Act established a similar tariff, but a lower one. For instance, the simple consultation listed at 25 fr. in the syndicat tariff appears in the caisse's tariff of liability at 15 fr. for towns and 12 fr. for the country. The caisse undertakes to reimburse a minimum percentage (laid down in the Act) of its own tariff. It does not recognise the tariff of the syndicat, and the patient will have to pay out of his own pocket to his doctor the fee charged in the latter. If his earnings are less than 14 fr. a week (the first two wage categories), the caisse will repay him 85 per cent. of what he is supposed to have paid the doctor; if he is in the upper three wage categories, the caisse repays 80 per cent. This is best explained by an example. The insured person has to have an abscess opened under local ethyl chloride: his doctor charges him 40 fr., which he pays before leaving the house. When he goes to the caisse they look up their tariff for opening an abscess with ethyl chloride and find 30 fr.; they therefore pay back their member 80 per cent. of this—24 fr. He is therefore out of pocket 16 fr. However, before the Act was passed he would have had to pay the whole 40 fr. himself, unless he was so poor as to come under public assistance or to touch the heart of his medical attendant, so perhaps he ought not to grumble. In fact, however, he is grumbling a good deal, having expected "everything for nothing." Moreover, a number of responsible people, including doctors of all ranks, feel that the tariff of liability is too low and will have to be raised.

Procedure of the Insured Person.

An employed person registers in one of the wage categories and enrolls himself a member of the caisse of his choice; the category registration lasts for one year and the caisse membership for two years. The employer is responsible for notifying his engagement of a new worker within eight days and for seeing that the contributions are paid. The employer has a card on which to stick stamps representing the part of the contribution which is set aside for old age insurance—this has to be sent into headquarters yearly; he also has a quarterly slip for sticking on the stamps relating to the rest of the insurance scheme—sickness, maternity, and disability. The slip has to be sent in quarterly, on a date corresponding with the insured person's birthday, so that some slips are always being sent in, and employers of many workmen have to keep a whole-time clerk on insurance work alone. The insured person receives a card of membership from the Ministry of Labour. When he is taken ill he takes this card to the caisse and receives a sickness form, with which he visits the doctor of his choice. He need not show the form until the end of the visit, and often the doctor does not know whether the patient is insured or not until he is about to part from him. All that the doctor has to do is to treat the patient as he would any other patient and then write on the form certain conventional symbols which indicate to the caisse what instructions he has given to the patient about staying in bed or in the house, without giving any

indication of diagnosis. He signs his initials as an indication that his fee has been paid and gives the best idea he can of the probable duration of the illness. On his own notepaper he writes prescriptions or orders for accessory services such as massage. He has no files of any kind to keep. The patient is responsible for keeping the sickness form, which is good for a fortnight, after which it must be exchanged for a new one at the caisse. The chemist also initials the form, indicating the amount of his bill. With the sickness form the insured person receives from the caisse a letter-card on which he copies the entries from the sickness form; he then sends it in, and is repaid his 80 or 85 per cent. according to the caisse's tariff of liability. If the illness is an urgent one, the insured person may go direct to his doctor and present his membership card; the doctor then gives him a certificate of urgency, which the caisse will exchange for the sickness form before the second visit. If the person is really indigent, and cannot produce the fee from his own pocket in the first place, the caisse can make him an advance. The great point seems to be that the doctor gets his cash down every time under all circumstances!

If the doctor wants to call a colleague in consultation he gives a certificate which the caisse exchanges for a second sickness form, which is used in the same way as the first. If the doctor thinks specialist attention is needed, his certificate to that effect is exchanged for a "form for special or surgical services," but, except in cases of urgency, the caisse has the right to insist that its control medical officer shall agree to the specialist service before it is received. Precisely similar arrangements cover massage, nursing, and dental services; there is a special form for orthodontic treatment, and a claim for artificial dentures must be submitted to a technical committee, and can only be allowed if the masticatory function is reduced by 40 per cent. or if the denture is necessary for the exercise of a profession or for therapeutic reasons. When hospital treatment is required, the practitioner, the hospital doctor, or the caisse control officer gives a certificate, and the sickness form is returned at once to the caisse. The insured person can choose his hospital, but once inside its walls he is subject to its regulations. Remuneration of hospital staffs is frankly recognised, and the caisses allow a sum of 4 fr. a day for a staff fund. The reimbursement for a period in hospital varies with the fees charged by the hospital to its private patients—from 13 fr. to 24 fr. a day and travelling expenses at the rate of 1 fr. 50 c. per kilometre from the patient's home to the nearest institution are allowed when the patient is too ill to travel by an ordinary conveyance.

The caisses reimburse 85 per cent. of the price of all drugs and appliances ordered by the doctor, but these are usually supplied at a special reduced price arranged between the caisse and the pharmacists. Every kind of special treatment can be covered: orthopædic appliances, spectacles, treatment in special institutions, and so on, provided that the caisse control officer approves and the institutions are "recognised."

The maternity form is similar to the sickness form, and a woman who has an abnormal pregnancy may claim sickness benefits during the pregnancy and for six months after the delivery. As soon as an insured woman knows she is pregnant she should obtain a certificate from the doctor or midwife, and present this at the caisse, together with her promise to abstain from paid work for a period of six weeks before and six weeks after delivery. The caisse will require her to have two or three antenatal examinations from the doctor of her choice; these are entered on the maternity form. Within 48 hours of delivery it should receive a letter-card certificate of accouchement. It also requires certificates from the employer of cessation of and return to work; these are also on letter-cards which can be posted without a stamp.

Medical Discipline.

The doctors are disciplined entirely by the local syndicat; even if a doctor is not a member of a syndicat, he is taken to admit its right to disciplinary functions when he enters into a contract with the caisse. The syndicats undertake to maintain control of all professional matters and, should they default, the departmental tripartite commission is empowered to take the necessary steps. Any complaint about the administration of the benefits in kind is made in writing to the president of the local syndicat by the caisse, the insured person, the doctor, or the syndicat itself. The president notifies the "director of control" of the syndicat, who can send a member of his staff to interview the doctor who is alleged to have offended. He usually notifies the doctor at least 24 hours beforehand. On receiving this report, the director decides whether there is enough evidence to necessitate notifying the president. If so, the president then decides whether or not to pass the matter on to the president of the "Conseil de Famille," a kind of "ethical committee" of the local syndicat. This body has the power of imposing the following penalties: warning, with or without notification to the caisse, censure, fine, or temporary or permanent exclusion from the services of a particular caisse or of all caisses with which the syndicat is in contract. All the major penalties must be notified to the caisse concerned. The offender can also be mulcted in costs and fined from 100 fr. to 1000 fr., the money going to the funds of the syndicat. The accused can be present at the hearing if he wishes, and can be represented by a doctor or a barrister. Appeal can be made by either side within a month of the decision, and must be addressed in writing to the President of the National Conseil de Famille, a body consisting of nine members elected by the general assembly of syndicats. In the last resort, appeal can be made from this to the Superior Council of Social Insurance.

If the doctor is unwilling to recognise the authority of the syndicat, the dispute can be taken before the cantonal commission, but in that case it is judged by laymen—a juge de paix, an employer, and an insured person.

Any attempt to canvass patients comes under the jurisdiction of the courts, and may be punished by a fine from 100 fr. to 2000 fr. or by imprisonment—from six days to two months; the maximum penalty is always inflicted for a second offence, and the tribunal can order the publication of the second sentence in a local journal at the expense of the guilty practitioner, up to 1000 fr. Doctors, surgeons, midwives, and pharmacists can be excluded from the insurance service for wilful false declarations, and are further liable to a fine (100 fr. to 2000 fr.) or imprisonment (six days to two months) if they are proved guilty of collusion with the insured.

The interests of the doctors are further considered in the provision which insists that caisses may only make contracts with professional bodies recognised by the confederation of syndicats; this is an attempt to control quackery. Stringent regulations govern the calls which an insured person may make on his doctor. He must not ask for a home visit unless it is absolutely impossible for him to go to the surgery; night visits and Sunday visits are only allowed in really urgent cases, and are charged at a higher rate; the patient must observe the doctor's orders religiously, and must not leave the house unless the doctor orders it for therapeutic reasons, and then only within hours stated by the doctor. A pharmacist must not be awakened at night to dispense prescriptions unless there has been an urgent night visit to the doctor.

The expenses of the doctors who serve on the technical commissions are paid by the parties making the appeal.

Doctors who do their own dispensing charge, of course, for the drugs, and fill in the sickness form in the space provided for the chemist's entry.

PUBLIC HEALTH SERVICES

MEASLES IN LONDON.

MEASLES breaks out in London every alternate year, usually late in the autumn, and takes six or seven months to complete the circuit of the city. This biennial recurrence is now well recognised, and another outbreak is due this winter. The London County Council has now published a review[1] of the 1929–30 epidemic, in the hope of assisting preventive work. Despite much propaganda, the public persists in believing that measles is a mild disease which can be safely treated by the mother—a belief fraught with very serious consequences. In the last epidemic the greatest incidence was in the age-group 4–5 and the fatalities were mostly among children under 2. The deaths occur almost entirely from complications arising before or soon after admission to hospital. The aim of the Council is therefore to educate the public, to secure prompt information of cases as they occur, and to obviate complications as far as possible. While compulsory notification has its adherents and is in force in two boroughs, this method has not so far met the needs of London as a whole, and the Council's policy is directed to using to the full the resources of school organisation; head teachers are required to report daily to the appropriate medical officers particulars of all cases of measles among their pupils. It will probably never be practicable, even if desirable, to send most cases of measles to hospital, and great stress must therefore be laid on the provision of an adequate service of home nursing. It is realised now that school closure is of little value, as it is almost invariably applied only when measles has a firm hold on the school. Seeking for some more effective means of limiting the spread among school-children, Dr. Kerr instituted a thorough inquiry into measles in the area of Woolwich. His general conclusions were that the disease spreads chiefly in children under 5, except in better-class districts where the younger ones are protected until they go to school; that it spreads whenever a school accumulates unprotected children to the extent of between 30 and 40 per cent. and continues until the proportion is reduced to between 15 and 20 per cent.; that accurate knowledge is required to deal efficiently with the disease and the "measles history" of every child should be taken on admission; that school closure is useless unless it is effected before the "first crop" falls; that two enormously important means of arresting spread are sanitary buildings and trained teachers; that death is often the result of parental ignorance; that the disease never spreads in senior departments; and that second attacks are so rare as to be negligible. The Woolwich inquiry marked the commencement of an epoch in dealing with measles in schools, as it laid the foundations of a system of control based on the exclusion of unprotected children from classes affected by measles. Even this measure was, however, found inadequate to check an epidemic, and efforts were therefore focused on the attempt to reduce mortality. The present method of dealing with measles includes daily visitation by school nurses during epidemic periods, examination of all children under 5, and exclusion and report of all suspicious cases. Leaflets containing advice to parents are distributed by the school organisation, and ailing children are visited every few days to see if measles has developed. Harmonious coöperation between the school nurse and the borough health visitor is of the first importance. An inquiry among medical officers of health showed that on the whole they were satisfied with the present scheme. Little progress has been made so far in the application of serum treatment, partly owing to the difficulty of obtaining convalescent donors, but experience has shown that excellent results follow the injection of 15 c.cm. of a parent's whole blood, and this method is to be tried prophylactically during the next epidemic. The report expresses the hope that concerted measures will be taken to augment the supply of serum, as there is no doubt that it possesses great potential value in the reduction of infant mortality.

Summarising the measures which the report urges for the anticipation of this winter's outbreak, the principles are: that every effort should be made to postpone the contraction of the disease, for the younger the child the greater the risk; that the most important means of preventing complications and death are adequate medical nursing and hygienic care; and that special methods of control must be applied to prevent or ameliorate the disease in under-nourished children living under unfavourable conditions, for in them it is particularly fatal. Since efforts to prevent the disease have all failed, owing to its high degree of infectivity by droplets in the pre-eruptive stage, the most effective measures in dealing with an epidemic are: the provision of increased temporary personnel—medical, nursing, and clerical—during the epidemic; the coöperation of agencies able to help in meeting the emergency; the visitation and instruction of families of reported cases and their contacts within 24 hours; the discovery, visitation, and instruction of families of non-reported cases and their contacts; the instruction of families in which there are young children in the neighbourhood of reported or discovered cases; the provision of medical and nursing care and material assistance to the necessitous; the investigation of the causes of death; education of the public; maintenance of a supply of convalescent serum; prompt isolation at home or immediate removal to hospital; prompt report of every case—best effected by coöperation between health visitors, teachers, and school nurses; and careful advice to the mother who is nursing her child on how to prevent complications and take the best care of the patient.

[1] L.C.C. Public Health Dept., pp. 20.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED SEPT. 12TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 19 (last week 63); scarlet fever, 1492; diphtheria, 912; enteric fever, 66; pneumonia, 475; puerperal fever, 41; puerperal pyrexia, 100; cerebro-spinal fever, 26; acute poliomyelitis, 7; acute polio encephalitis, 2; encephalitis lethargica, 8; dysentery, 1; ophthalmia neonatorum, 97. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Sept. 15th–16th was as follows: Small-pox, 43 under treatment, 3 under observation (last week 39 and 5 respectively); scarlet fever, 1091; diphtheria, 1345; enteric fever, 15; measles, 99; whooping-cough,[1] 357; puerperal fever, 18 (plus 12 babies); encephalitis lethargica, 215; poliomyelitis, 9; "other diseases," 91. At St. Margaret's Hospital there were 18 babies (plus 14 mothers) with ophthalmia neonatorum.

[1] Last week 380, the number was incorrectly given.

(*Continued at foot of next page.*)

PSYCHIATRIC OUT-PATIENT CLINICS

AT LONDON COUNTY COUNCIL GENERAL HOSPITALS.

THE facilities which exist at the Maudsley Hospital for diagnosis of neurotic and mental illnesses and for the continued treatment of these conditions in its wards and out-patient department have hitherto been less readily available to patients living in the northern districts of London than to those from parts south of the Thames. Initial attendance in the out-patient department has been essential except in the case of patients recommended for admission by recognised consultants in nervous and mental disorders, and records of the source of patients show that the hospital is thought too remote for some. In order to increase accessibility of psychiatric diagnosis and treatment, the London County Council has recently decided to establish psychiatric out-patient clinics at each of three municipal general hospitals north of the river.

The general supervision of the clinics has been assigned to the medical superintendent of the Maudsley Hospital, to whom all correspondence should be addressed. The physician in charge of each clinic will also be drawn from the Maudsley Hospital staff; with the latter, however, will be associated members of the staff of the London County Mental Hospitals. This medical staff will have the assistance for investigation and disposal of specially trained psychiatric social workers recently appointed by the Council.

While the Maudsley Hospital will continue to exercise unchanged all its previous functions in respect of patients living south of the Thames, the three other psychiatric clinics will serve as centres for consultation and selection more easily accessible to patients sent by practitioners in the northern areas. A short report and recommendation as to disposal will be sent to every doctor referring a patient to one of these clinics.

The essential condition of suitability for reference to one of these psychiatric clinics is likelihood of fitness for further treatment on a voluntary basis at the Maudsley Hospital or elsewhere. Among specially suitable conditions may be mentioned (1) neurotic disturbances—e.g., neurasthenia, hysteria, obsessional states, and anxiety states; (2) mental or neurotic symptoms associated with well-defined physical disease. There are special facilities for treatment at the Maudsley Hospital of conditions belonging to both the above classes.

In determining suitability severity of symptoms is perhaps of less importance than prognosis. But no useful purpose will be served by sending to the clinics patients of the following types: (1) Mentally defective patients of any grade; (2) patients clearly requiring certification under the Lunacy Acts. These cases should as hitherto be referred to the relieving officer for admission to the observation ward; (3) non-volitional patients suitable for being dealt with under the temporary treatment clauses of the Mental Treatment Act. These should also be referred to the observation wards.

While all facilities are available at the Maudsley Hospital for study and treatment of the abnormal child, they will not be available at the psychiatric out-patient clinics, and children should not be sent to these.

Patients should be accompanied by a relative or friend capable of furnishing a history and taking all necessary responsibilities. It will greatly facilitate investigation if notice of the forthcoming attendance of any patient is sent in advance to the Medical Superintendent, Maudsley Hospital, Denmark-hill, and as a rule priority will be given to patients in respect of whom such notice has been received.

Below are given the names of the three hospitals at which the new psychiatric clinics are held and of the physicians in charge of each, the times of the bi-weekly sessions and lastly a list of the London boroughs from which patients should be sent to the respective hospitals.

Mile End Hospital: Dr. Aubrey Lewis.	Monday and Thursday. 2.30 P.M.	Stepney, Poplar, City of London, Bethnal Green, Hackney, Stoke Newington.
St. Mary, Islington, Hospital: Dr. Louis Minski.	Tuesday and Friday, 2.30 P.M.	Hampstead, St. Pancras, St. Marylebone, Holborn, Islington, Finsbury, Shoreditch.
St. Charles Hospital: Dr. E. W. Anderson.	Wednesday, 2.30 P.M. Friday, 10 A.M.	Hammersmith, Kensington, Paddington, Fulham, Chelsea, Westminster.

As indicated above, treatment (after the initial interviews necessary for complete diagnosis) will usually, owing to local exigencies of time and space, have to be carried out at the Maudsley Hospital either in its wards or its out-patient department. Plans are under consideration for the expansion of the accommodation of the hospital to the extent likely to be necessary in order to meet increase of demand by the psychiatric clinics mentioned above.

The arrangements for continued out-patient treatment at the Maudsley Hospital have been much improved since the Mental Treatment Act legalised the necessary expenditure. By addition of special out-patient staff, not only has increase in frequency and in length of interviews been rendered feasible, but also continuity of treatment of a given patient by one psychotherapist has been more definitely ensured. All interviews after the preliminary ones are now by appointment at a definite time, and in the case of those in employment such appointments are made after working hours up to 10 P.M.

(*Continued from previous page.*)

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox or enteric fever, 8 (1) from measles, 3 (1) from scarlet fever, 15 (1) from whooping-cough, 23 (0) from diphtheria, 44 (5) from diarrhœa and enteritis under two years, and 28 (4) from influenza. The figures in parentheses are those for London itself.

Bradford reported 3 deaths from measles, Doncaster, 2; Liverpool and Manchester each reported 3 deaths from whooping-cough, Birmingham and Oldham each 2. Three fatal cases of diphtheria occurred at each of Coventry, Manchester, and Rhondda. Diarrhœa was credited with 7 deaths at Liverpool, 6 at Manchester, 3 each at West Ham, Salford, and Newcastle-on-Tyne.

The number of stillbirths notified during the week was 262 (corresponding to a rate of 39 per 1,000 births), including 45 in London.

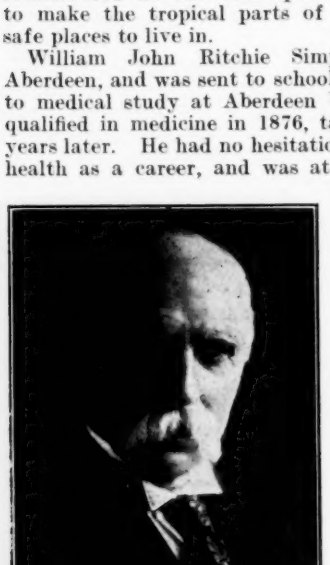
REMEMBRANCE DAY.—Last year the Poppy Day appeal on Armistice Day produced £524,650, the largest sum yet contributed, and an advance of £5160 upon the total of 1929. The cost of administration is less than 5 per cent.; the cost of making 37,000,000 poppies by 276 severely disabled ex-Service men is about 16 per cent. of the income. Most of the balances are given to the British Legion relief fund.

OBITUARY

SIR WILLIAM SIMPSON, M.D. Aberd., F.R.C.P. Lond., D.P.H.

Sir William Simpson, who died at the Ross Institute on Sunday last at the age of 76 years, will be remembered as one who spent his life in helping to make the tropical parts of the British Empire safe places to live in.

William John Ritchie Simpson was born in Aberdeen, and was sent to school in Jersey, returning to medical study at Aberdeen University, where he qualified in medicine in 1876, taking the M.D. four years later. He had no hesitation in choosing public health as a career, and was at first medical officer of health for his native city, lecturing on hygiene in the University before going out to Calcutta as chief health officer, a position which he held for 12 years. From that time on his life was largely made up of health commissionerships and inquiries. In 1900 he took part in an inquiry into dysentery and enteric fever in South Africa, and in the following year was chief commissioner dealing with the outbreak of plague in Cape Colony. In 1902 he was called on to study the causes and continuance of plague in Hong-Kong. In 1906 he reported on the sanitary condition of Singapore, and in succeeding years investigated health conditions in the West African Colonies, in Uganda and Zanzibar, and in the mining villages of the Gold Coast and Ashanti. During the whole of this period he was lecturing, when time permitted, at King's College, London, where he held the chair of public health in the University of London, and later at the London School of Tropical Medicine. The fruits of his work must be looked for in a multitude of official reports and in the Croonian lectures delivered before the Royal College of Physicians of London, which were based on the need which had gradually impressed his mind of a trained service for the prevention and mitigation of plague in India. He told his hearers quite frankly that if the stupendous disasters of 1907 were not to be surpassed, steps to organise such a service must be promptly taken. Practical measures were always in his mind, as on his return from a survey in West Africa, when he addressed a mixed company of professional and commercial men in Liverpool and told them what the conditions in West Africa might become if public health administrators were given a free hand—a prophecy which has since been realised in large measure.



SIR WILLIAM SIMPSON.

[*Photograph by Claude Harris.*

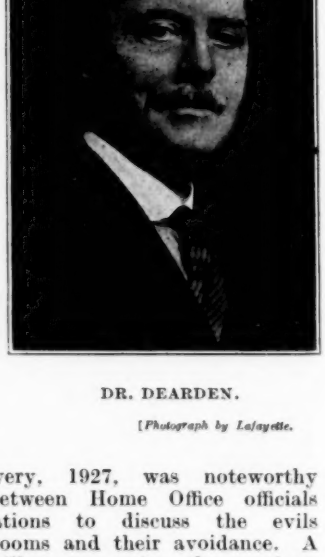
Simpson was a profuse and diligent writer. When in India he edited the *Indian Medical Gazette*, and later he became responsible for the *Journal of Tropical Medicine*, while a number of treatises on plague and cholera stand to his credit; but no work was nearer his heart than a volume which first appeared in 1908 setting out the principles of hygiene as applied to tropical and subtropical climates and the principles of personal hygiene in them as applied to Europeans. It was the first authoritative work of its kind, and appeared at a time when an ever-increasing number of Europeans were requiring precisely the kind of information with which it was packed. The volume contains his chief claim to the gratitude of posterity.

Not content to take his ease at an age when other men would have given up the strain of administrative work, Simpson voluntarily undertook to become director of tropical hygiene at the Ross Institute at Putney Hill, and physician to the attached hospital. His cumulative services were recognised by a number of distinctions, the C.M.G. in 1909, the Order of St. Sava of Serbia in 1918, the honour of knighthood in 1923. In 1888 he married Mary, daughter of the Rev. Dr. Jamieson, of St. Machar Cathedral, Old Aberdeen, who, with one daughter, survives him.

WILLIAM FRANCIS DEARDEN, M.R.C.S. Eng., D.P.H., J.P.

Dr. Dearden, who died at the Salford Royal Hospital on Sept. 15th as the result of a chill, was almost due to retire after 25 years' service as medical officer to the Port of Manchester. His death has removed one of the best-known and respected figures in the region of industrial hygiene.

William Francis Dearden was born at Bolton, Lancashire, on March 22nd, 1863; educated at the High School there and at Owens College, Manchester, where he went on to complete his medical studies, becoming M.R.C.S. and L.S.A. in 1885, and taking the public health diploma of Victoria University four years later. After spending some time as ship's doctor with the Glen Line, he practised at Crumpsall and Blackley with a strong bias to industrial medicine as certifying factory surgeon and officer to various provident associations. So whole-heartedly did he devote himself to the occupational hazards of the cotton industry that he was appointed by the Royal College of Physicians of London to give the Milroy lectures, wherein he placed on record observations gathered over many years. The year of delivery, 1927, was noteworthy for a conference between Home Office officials and cotton associations to discuss the evils of dust in carding rooms and their avoidance. A remarkable table of illnesses causing absence from work presented to this conference indicated the



DR. DEARDEN.

[*Photograph by Lafayette.*

extent to which exposure to dust was producing invalidity. Dearden's Milroy lectures and his contributions on the same subject to "Occupation and Health" will long remain as standards of reference. He came to take a leading part in the affairs of the Association of Certifying Factory Surgeons, acting both as secretary and president, and wrote several excellent brochures on the function of a factory medical service. He had much to do with the entrance of numbers of young people into industry, and he laid down for himself as a guiding principle the selection of employment suitable to physical capacity, one in which the individual will have a fair average chance of continuing without undue detriment to himself. He was always keen on improving the system in the direction of securing continuance of employment in the right groove until completion of education in a trade.

Dr. Dearden combined in an unusual degree the abilities of a public officer and the qualities of a man of the world. He had in his earlier days been a member of Manchester city council, and he was a justice of the peace for the city; brought thus into intimate personal contact with public men, he retained amongst them the high esteem which his professional and official services deserved. His work for the British Medical Association further emphasised the many-sidedness of his character. One of his friends writes: "Dearden was first of all a Lancashire man and then a doctor—a fine combination. Whatever he undertook he did with great enthusiasm, and he brought to bear on his duties a power of original observation. He was always seeking for knowledge and for means to put such knowledge to good use. A regular attender at international congresses, the absence of his personality at the recent meeting held in August at Geneva was keenly felt. All who came in touch with him benefited from his vigorous mentality and bowed before the charm of his character."

Dr. Dearden was a member of the Permanent International Committee for the Study of Occupational Diseases, and among other literary work he was assistant editor of the Anglo-American *Journal of Industrial Hygiene*, to which from time to time he made valuable contributions. Witness to the quality of his work as port medical officer is found in his continued care for improved quarters among the barge-men and the frequent condemnation as unfit of quantities of food reaching Manchester by way of the Ship Canal.

He married Annie Rosalie Arden, who survives him with a daughter. They had just returned from Claygate, Surrey, where he was intending to settle on his retirement.

SIR HARRY BALDWIN, C.V.O., M.R.C.S., L.D.S. Eng.

Sir Harry Baldwin, who died at Vannes, in Brittany, last Sunday, was surgeon-dentist to the King from 1918 to 1926, since when he had held honorary rank. The son of George Baldwin, of West Bridgford, Nottinghamshire, he was born in 1862, and received his education at Nottingham High School, the Royal Dental Hospital, and Middlesex Hospital. He took his L.D.S. diploma in 1884, and qualified as M.R.C.S. three years later. His student career at the Dental Hospital was an unusually successful one, and after qualification he became assistant house surgeon, medical tutor, and eventually dental surgeon there. He set up in practice in Cavendish-square, and numerous papers in dental journals during the next few years testify to his interest in technical problems. He soon attained a considerable eminence in the profession, and occupied numerous official positions. In 1912 he was president of the British Society for the Study of Orthodontics, in 1913 treasurer of the International Dental Conference, and in 1915 president of the Odontological Section of the Royal Society of Medicine. To the medical profession generally he was known, of late years more especially, as an advocate of dietary reform as a means of promoting the growth and preservation of the teeth, and he lent valuable support to the movement in favour of using fresh and "natural" foodstuffs, such as wholemeal bread. Knighted in 1918, he was appointed C.V.O. in 1923. For some years he had been living at St. Helen's, in the Isle of Wight, where he was able to enjoy the yachting, golf, and painting which were his main recreations. He married, in 1914, Lucy, daughter of John Orr White, of Rutherglen, Glasgow, and had one daughter.

SAMUEL RUTHERFORD MACPHAIL, M.D. Edin.

AFTER a long illness Dr. Rutherford Macphail has died at Edinburgh at the age of 74. Son of the Rev. John Macphail, he was born at Isle Ornsay, Skye, and educated at Stewart's College and the University of Edinburgh. Graduating in 1878 he undertook a variety of resident appointments in Greenock, Wolverhampton, Huddersfield, and elsewhere before devoting himself to the mental hospital work in which he finally found his vocation. His first post in this service was at the Cumberland and Westmorland Asylum, where he made clinical observations on the blood of the insane—which won him the prize and medal of the Medico-Psychological Association in 1884. Four years later he became the first medical superintendent of the Derby Mental Hospital and here he remained until after the late war. Thence he went to New Saughton Mental Hospital at Polton, Midlothian, where he was medical superintendent until recently.

Dr. Macphail was well known to the medical profession in Scotland for his association with the Caledonian Society. One of the founders of the Society, he was its secretary and treasurer for many years. At its jubilee celebrations in 1928 he acted with Dr. W. A. Macnaughton as joint president, and the loss of his charming presence and his enthusiasm for Celtic tradition will long be felt. In earlier days he was a notable Rugby forward, and represented Edinburgh University, the West of Scotland, and Liverpool. He married Mary, daughter of G. A. Main, of Carlisle, who survives him with a family of three sons and three daughters.

ROTHERHAM HOSPITAL.—A new out-patients' department has recently been opened. It has cost £20,000, rather more than half of which was provided by the local war memorial fund. Equipment cost a further £2500.

TEMPORARY HOSPITAL APPOINTMENTS.—Walsall public assistance committee reports that there has been great difficulty in filling temporary appointments at its Manor Hospital. It is stated that "there are fewer candidates now qualifying in medicine, and many who are qualifying go into general instead of hospital practice. There are also enough vacancies in teaching hospitals to absorb the remaining candidates, while permanent positions with superannuation rights available in municipal hospitals are attracting newly qualified persons." It has therefore been decided that when the assistant medical officer's appointment expires in December (£200 and emoluments), an assistant of permanent rank shall be appointed at £350 and emoluments.

CORRESPONDENCE

ALBUMINURIA COMPLICATING PREGNANCY.

To the Editor of THE LANCET.

SIR,—Mr. G. F. Gibberd's paper in your issues of Sept. 5th and 12th is both original and stimulating. He appears to be the first among British obstetricians to point out and to emphasise the frequency with which the pregnancy toxæmias give rise to chronic nephritis. The importance of this observation can hardly be overestimated, though it is only fair to mention that pregnancy has long been regarded by physicians as one of the most frequent causes of chronic nephritis in women. It is referred to by Dickenson, for example, in his article on granular kidney in Allbutt and Rolleston's "System of Medicine," 1905. The subject indeed is one of as much interest to the physician as to the obstetrician, and for this reason I venture to make some comments.

Although it is well known that nephritis, both acute and chronic, occurs less often in females than in males at all ages, it is not generally recognised that during the child-bearing age in the female its frequency more nearly approximates to that of the male than at other ages. Undoubtedly this is due to the influence of the pregnancy toxæmias; but not entirely, because the same relative increase in incidence at this age period is also seen in acute nephritis, a condition which is only rarely met with during pregnancy. One infers therefore that not only is pregnancy itself a frequent cause of chronic nephritis, but that, during the period of life in which pregnancy occurs, there is also an undue susceptibility to contract nephritis.

Gibberd's conception of "occult nephritis" is very original, and the term will, I am sure, prove useful in other fields of nephrology.

Inasmuch as the treatment of albuminuria of pregnancy is bound up with the question of the prevention of chronic nephritis, a physician may perhaps hereto be allowed to make a few remarks. Gibberd points out that the treatment he advocates "aims primarily at protecting the kidneys against the 'toxæmia,' and has as its basis, rest, protein-free diet, and early induction of labour." The value of rest no one will dispute. The desirability of early induction of labour he has supported by statistical evidence which must be accepted, and in the present state of knowledge (or ignorance) regarding the ætiology of the condition, this procedure seems to be the best practical measure to adopt. The evidence in favour of a protein-free diet, however, does not seem to me to be sufficiently convincing.

The diet advocated by Gibberd is one which is as nearly as possible protein-free, and is given with the object of entailing the least amount of work on the part of the kidney. Now, although he professes to be disappointed with the practical results of biochemistry in elucidating the problems of the toxæmias of pregnancy, he will at least allow that the demonstration of the frequency of the increase in non-protein nitrogen in the blood with increasing severity of the condition—i.e., in the order: simple albuminuria, pre-eclamptic toxæmia, nephritic toxæmia and eclampsia—was achieved by biochemical methods, as also were the proofs that a protein diet causes an increase in basal metabolism and an increased excretion of nitrogen and salts—all arguments used by Gibberd in defending his advocacy of a protein-free diet. This, however, is by the way, because I believe the value of such a diet has not yet been sufficiently proved.

It is now, I think, generally agreed that in the treatment of nephritis, except where there is advanced azotæmia (uræmia), and in the early stages of acute nephritis, no object is gained by diminishing the protein intake below that necessary to maintain nitrogenous equilibrium (say, 1 g. of protein per kg. of body-weight, excluding œdema). In fact it is undesirable to do so. This is the present practice, and it is based on prolonged clinical and biochemical investigations. Further, the renal lesion which is found in the pregnancy toxæmias approximates most closely to that type of renal disease in the non-pregnant known as "nephrosis," in which a comparatively high protein diet is now regarded as essential to replace protein lost by the blood plasma through the kidneys, a state of affairs which also obtains (and incidentally was established by biochemical methods) in the pregnancy toxæmias. I have not sufficient experience in the treatment of the renal complications of pregnancy to assert positively whether or not, and under what conditions, a high or a low protein diet should be given, but I should like to know whether from the practical point of view a comparative series on both types of diets exists, from which conclusions could be drawn.

With regard to the advisability of giving glucose, I am in complete agreement, but I cannot see the value of either diaphoresis or purgation. As far as I am aware, no scientific evidence has ever been forthcoming that constipation ever causes anything more than the most transient discomfort which can usually be overcome by such simple means as liquid paraffin or enemas.

Finally, I cannot refrain from commenting on the remarkable fact that, although the association of albuminuria with eclampsia was observed as long ago as 1843 by another Guy's obstetrician, C. W. Lever, it was not until 1927 and 1928 when James Young and Gibberd, working independently in this country, discovered that albuminuria of pregnancy recurred in something like 50 per cent. of cases. The recency of this discovery, which completely alters the views previously held on this subject, affords a striking illustration of the danger of clinical teaching based on inadequately controlled clinical observation and handed on parrotwise from generation to generation. It also reveals, in my opinion, a grave defect in the methods of administration of our much vaunted hospital systems, for with an efficient method of record-keeping (which would of course include a follow-up department) such a simple and important fact would not have remained unnoticed for 84 years.

I am, Sir, yours faithfully,

A. ARNOLD OSMAN.

Harley-street, W., Sept. 21st, 1931.

BENDIEN'S WORK ON CANCER.

To the Editor of THE LANCET.

SIR,—In a recent paper [1] with Dr. E. R. Holiday we criticised the spectrometric part of Bendien's cancer test, showing that the absorption curves of the solutions obtained from the sera both of patients with carcinoma and those with various other diseases changed on standing from the curve given by Bendien for tuberculosis to that given for cancer. Before

[1] THE LANCET, August 29th, p. 507.

publishing this criticism we made sure that Bendien had taken no precautions to examine his solutions at once or after standing a definite time. We have since found exactly the same change on standing when we used a sample of sodium vanadate given us by Dr. Bendien in place of that purified by ourselves.

The fact that we used a spectrometric method different to that used by Bendien is of no significance. The extinction coefficients plotted in the absorption curve are physical properties of the solutions, independent of the method of measurement. The method used by Bendien, though older than ours, is sound, and in capable hands should yield the same results. Anyhow the question of methods is beside the point. The change which consists of a disappearance of the absorption in the visible part of the spectrum is visible to the naked eye; the solutions are yellow when freshly prepared and become colourless on standing.

Although our criticism is fatal to the spectrometric part of the test and can easily be confirmed or refuted in a few days by anyone possessing the necessary solutions, no reply has been made. We infer that Bendien's spectrometric work is vitiated by a technical error. As first understood in England,[2] and as would appear from Bendien's book, the spectrometric part of the test is essential for the diagnosis of cancer. If this part is discarded it is necessary to consider the value of the chemical part. It is admitted that the mere appearance of a precipitate in the lower tubes is not specific.[3] It has been suggested that the test may be of value in detecting the appearance of secondaries after the removal of a primary growth, and that elderly persons whose sera do not give precipitates in tubes 6 and 7 are predisposed to cancer.[4] Such a statement as the last could only be of value if supported by abundant statistical evidence; but all that Bendien says is that some of about 60 such cases have subsequently developed cancer. Considering the incidence of cancer in elderly persons this might be expected. From Bendien's book it is not clear how many cases have been examined and in what proportion of these cases the changes described are found; but space is found to enumerate fantastic experiments, in which, for example, vitamin A (nature and amount not specified), tubercle bacilli, and vaccinia vaccine[5] were added directly to sera before testing.

We feel justified in questioning whether there is evidence that any part of Bendien's test gives information of value in connexion with cancer.

We are, Sir, yours faithfully,

F. CAMPBELL SMITH,
JOHN MARRACK.

Hale Clinical Laboratory, London Hospital, Whitechapel, E., Sept. 19th, 1931.

IRREGULARITIES OF THE TEETH.

To the Editor of THE LANCET.

SIR,—The leading article in your last issue (p. 642) is interesting as well as controversial. After long experience, I still feel convinced of the close relationship between mouth-breathing—brought about by any cause of nasal obstruction—and abnormalities of the jaws and of the position of the teeth in the jaws, two distinct factors which often go together. As regards the latter, regular alignment can be attained by one of two methods: expansion of the jaws or extraction of certain teeth. Sometimes the two methods are necessary. The former is long and tedious, the latter simple, rapid, and permanent, as I can testify from long practice. The subject is too large to dilate upon at any length, but as orthodontic treatment is becoming more called for by the public—Dr. E. H. T. Nash the M.O.H. for Heston and Isleworth U.D. Council has already a large orthodontic clinic as a section of his work—I think it advisable that the profession should be reminded that the time-honoured system I advocate is applicable in many cases. I am, Sir, yours faithfully,

Harley-street, W., Sept. 22nd, 1931. W. RUSHTON.

[2] Brit. Med. Jour., August 1st, p. 196.
[3] Bendien: Spezifische Veränderungen des Blutserums. Jena: Gustav Fischer, 1931, p. 69.
[4] Ibid., p. 67. [5] Ibid., p. 21.

ALUMINIUM AND HEALTH.

To the Editor of THE LANCET.

SIR,—Although it may be admitted that aluminium cooking vessels are not injurious generally, it is possible that in certain cases their use is distinctly harmful. Some time ago I read a paper by Dr. LeHunte Cooper and, as one of the cases quoted by him somewhat resembled my own, I decided to stop the use of all aluminium in my kitchen. For three years I had suffered from severe abdominal pain, which had been diagnosed by various authorities as malignant disease, chronic appendicitis, duodenal ulcer, spastic colitis, &c. Various forms of dieting and medicinal treatment had failed to give any relief. Within a few days of my stopping the use of aluminium vessels all my pain disappeared, and there has been no return, except on one day, and that was after I had inadvertently taken food cooked in aluminium. Some time later I saw a patient who had had abdominal pain for six months, which had baffled all treatment. Immediately on stopping the use of aluminium vessels his pain completely disappeared. Port wine in general is a valuable stimulant, but if some people drink a wine-glassful they have to pay the penalty, and in like manner I believe that in some cases aluminium is a poison.

I am, Sir, yours faithfully,

London, Sept. 22nd, 1931. ALEXANDER FRANCIS.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—In a book reviewed in your columns last week, Dr. C. B. Heald, in referring to treatment by graduated contraction of muscles, electrically provoked, writes: "The credit of introducing muscle movements and re-education is chiefly due to Mr. Rowley Bristow, and the apparatus is therefore often called by his name." As this and similar statements have appeared in various publications, I feel obliged to write and disclaim any responsibility as the introducer or inventor of this method. In a small book, entitled the "Treatment of Muscle and Joint Injuries," which I wrote in 1917, I stated:—

"A brief account of this method of treatment was published in a paper entitled the Treatment of Muscular and Joint Injuries by Graduated Contraction, in THE LANCET in 1912, by Dr. Morton Smart and myself, and he was the first medical man to systematise and work out the particular method hereinafter described of dealing with both acute and chronic joint injury."

Dr. Morton Smart, in 1923, read a paper at the Electrotherapeutic Section of the Royal Society of Medicine, and gave a demonstration with the new

(*Continued at foot of next page.*)

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

BUDGET RESOLUTIONS.

THE House of Commons was mainly occupied on Tuesday, Wednesday, and Thursday, Sept. 15th to 17th, with the discussions in Committee and on Report of the Budget resolutions. These were finally disposed of on Thursday night, when the House confirmed its approval in principle of the Government's scheme of fresh taxation. Major ELLIOT (the Financial Secretary to the Treasury) then brought in the Finance (No. 2) Bill, which was read a first time. Commander BELLAIRS presented a Bill on Thursday to amend the Housing (Financial Provisions) Act, 1924, which was read a first time.

PANEL PRACTITIONERS' REMUNERATION.

On Friday, Sept. 18th, the House of Commons went into Committee on the financial resolution authorising the payment of moneys required by reason of the provision of Orders in Council under the Economy Bill.

Mr. CHAMBERLAIN (Minister of Health), in moving the resolution, said that of the five services detailed in the schedule to the Economy Bill only two—health insurance and unemployment insurance—were governed by the financial resolution, and only part of those services were affected. The resolution, so far as it affected national health insurance, related to the remuneration of doctors and chemists, and so far as it affected unemployment insurance it related to the proposed increase in the contributions on the part of employers, employees, and the State, and the substitution for borrowing by the Unemployment Insurance Fund of a direct charge upon the Exchequer in the shape of a deficiency grant. The remuneration of doctors and chemists was part of the benefits of the National Insurance Acts, and those benefits were paid for partly by contributions and partly by the Exchequer. The result, therefore, of the proposed reduction was to give back to the Exchequer something which it had already paid out for another purpose. With regard to the doctors and chemists, it was proposed to reduce their remuneration by approximately one-ninth. He wished to pay a tribute of admiration and gratitude to the doctors and chemists for the spirit in which they had received this proposal of the Government. They had stated at once that, treating this deduction from their remuneration, not as a readjustment on its merits, but as a contribution to meet the national needs, they readily agreed to pay their share. (Ministerial cheers.) They had shown a fine example, and the Government were very grateful. The result would be that in a full year the panel doctors would suffer a cut in their remuneration of £850,000, and the chemists a cut of £120,000. The position in regard to unemployment insurance had been going from bad to worse for some time. In June, 1929, the debt was about £37,000,000. Since then the whole cost of transitional benefit, estimated under present conditions at something like £35,000,000 for next year, had been transferred to the Exchequer. The debt at present was £100,750,000, and the borrowing powers were for £115,000,000. The proposal of the Government was that borrowing should cease, and that after the proposed readjustments the deficiency, which was estimated for next year at £22,000,000, should fall upon the Exchequer in the form of a deficiency grant. The finance of the Unemployment Fund was based on an average live register of 3,000,000. There was to be an increase in contributions amounting to £10,000,000. This would cost the State £5,000,000 next year, and was estimated to cost £2,500,000 this year.

Mr. PETHICK-LAWRENCE (who was Financial Secretary to the Treasury in the late Government) said that the Opposition offered uncompromising hostility to the unemployment policy of the Government. So far as the agreement which the doctors and the chemists had made with the Government was concerned, the Opposition offered no objection, and those gentlemen ought to be thanked for being willing to make that sacrifice. In the alterations which the Government were making in the rates of contribution for unemployment insurance, the heaviest percentage fell upon the workers. In his opinion, the Government's proposals were part of a general scheme for imposing unequal sacrifices on different sections of the community.

THE FEELING OF THE MEDICAL PROFESSION.

Lieut.-Colonel FREMANTLE said that he wished to emphasise the point which the Minister of Health had made in regard to the salaries of panel doctors. He had taken pains to find out what was the actual feeling on the subject in the profession, especially in the British Medical Association, which corresponded to the great mass of the medical men concerned. There were over 15,000 panel doctors—a very material section of the profession. It was interesting to note the line which the panel practitioners took in this matter. They met the Minister early in the month, and discussed the question very frankly. It was shown that the contract made by the doctors originally was a definite one, and binding so far as anything could be binding; and in the ordinary course any alteration asked for by the State would be submitted to a court of arbitration. He understood that the representatives of the medical profession definitely took the line that on this occasion they were called upon to make a cut, a sacrifice on behalf of the country, quite apart from any question of arbitration, on a revision of their terms of employment. But he wished it to be on record that in undertaking to accept without opposition this cut, the doctors did so in view of the national emergency without prejudice to revision in the ordinary way when the time came. The cut proposed in the case of doctors was equivalent to a little over 11 per cent. of their remuneration; but when that was accepted by the representatives of the insurance practitioners it was not realised that there would be an increase in income-tax and petrol duty. (Opposition laughter.) He would not argue about the income-tax at that stage, but the increase in the petrol duty was very serious, bearing specifically on the medical profession, especially in rural areas. But in spite of this there had been no change in the doctors' attitude; they had recognised that they must suffer with the rest of the community. Medical men, and especially panel practitioners, were living on a very narrow margin, and these extra burdens constituted a very serious difficulty and impediment to them in their professional work. It was very serious, because the ordinary doctor lived for his profession in a way that was hardly true of any other class. Therefore their attitude in this matter was of great value to the country. He had not the slightest doubt that the chemists took the same patriotic and intelligent line. He hoped that the insurance service would not suffer by these proposals;

(*Continued from previous page.*)

coil which he was using. In the subsequent discussion I again disclaimed any connexion with the invention of the coil. I explained that it had been my task to introduce it into the special military hospitals and to demonstrate its effect in the treatment of muscle injury and muscle insufficiency, and that my knowledge of the coil and its working came direct from Dr. Smart.

I am, Sir, yours faithfully,

Sept. 21st, 1931. W. ROWLEY BRISTOW.

he was sure that the doctors would not allow it to do so if they could help it. (Cheers.)

After further debate,

The resolution was agreed to by 219 votes to 155, and reported to the House.

SUSPENSION OF THE GOLD STANDARD.

On Monday, Sept. 21st, both Houses of Parliament passed through all its stages a Bill to suspend the operation of Subsection 2 of Section 1 of the Gold Standard Act, 1925. Mr. SNOWDEN (the Chancellor of the Exchequer), in asking leave to introduce the measure, was opposed by members of the Opposition, who protested against the hurried procedure. Mr. Snowden explained that the Bill suspended the obligation of the Bank of England to sell gold until such time as that obligation was restored by Royal Proclamation; that it indemnified the Bank for refusing to sell gold that day in advance of new legislation; and that it gave the Treasury power during the next six months to make and vary any measures they desired for controlling the exchanges. The right hon. gentleman contended that the formation of the National Government had restored confidence, and the flight from the pound practically stopped. It resumed, however, because there had been no united front in this country, because prominent people had advocated inflation and repudiation, and because the unrest in the Navy had been used for scare purposes. The crisis was then brought about by a scramble among foreign holders of British securities to liquidate their holdings, not so much because of lack of faith in the pound, as from fear of events in their own financial centres. The Government had striven to avert the abandonment of the gold standard, but had failed in face of a world-wide panic in all investment markets. In these circumstances this country must protect itself from a panic which threatened the breakdown of the international credit system. He thought that the suspension of the gold standard in this country, though serious, would be transitory. There was no reason for any serious or prolonged depreciation provided our national finances were sound. There would be no uncontrolled inflation such as had occurred in other countries. He appealed to all parties to form a united front.

Mr. HENDERSON, speaking for the Opposition, agreed that there was no need for panic, but laid down the condition for the Opposition joining in a united national effort that the Economy Bill proposals should be abandoned and that the Budget should be balanced by other means.

A prolonged debate followed, in the course of which Mr. STEPHEN, a Left Wing Socialist, moved the rejection of the Bill.

Finally the motion for rejection was defeated, and the Bill was passed and sent to the House of Lords at a late hour, where it received the Royal Assent.

HOUSE OF COMMONS.

WEDNESDAY, SEPT. 16TH.

Safety in Mines.

Mr. T. SMITH asked the Secretary for Mines whether it was intended to proceed with the safety conferences initiated by his predecessor.—Mr. FOOT (Secretary for Mines) replied: It is certainly my intention to continue the general policy of fostering in all sections of the mining industry discussion on the spread of knowledge on the many problems of safety. Already four conferences have been held at Newcastle-on-Tyne, Glasgow, Sheffield, and Cardiff. It is my desire that conferences on similar lines shall be held in the four other inspection divisions, and arrangements will be made accordingly as soon as conditions make it possible.

Factory Inspectorate.

Major EVANS asked the Home Secretary whether he could give the number of additional appointments to the factory inspectorate made in pursuance of the recommendations of the departmental committee; and whether these included any person who did not possess a university degree or other equivalent qualification.—Mr. STANLEY replied: Since the committee reported, 40 additional inspectors have been appointed, besides 19 appointed from outside, and 16 inspectors' assistants promoted, to fill vacancies. Of the inspectors appointed from outside, all but two had university degrees or other equivalent qualifications in engineering, industry, or science.

Major EVANS: Is not the new procedure a reversal of that instituted at the Home Office many years ago, by which preference was given to persons possessing a practical knowledge of industrial processes?

Mr. STANLEY: The hon. Member will be aware that the committee which considered this matter in 1929 was greatly impressed by the need of factory inspectors having a wide range of knowledge and that facilities were suggested by way of scholarships for men of practical experience to obtain university qualifications. I may add that a considerable number of these additional inspectors who have university qualifications have had practical experience in the workshop.

THURSDAY, SEPT. 17TH.

Training of ex-Officers and Nurses.

Major EVANS asked the Minister of Labour the number of ex-officers and nurses accepted for training under the royal warrant during 1928, 1929, and 1930.—Sir H. BETTERTON replied: There have been no acceptances for training under the royal warrant during 1928, 1929, and 1930.

Slum Clearance.

Mr. ALBERY asked the Minister of Health how many areas had now been cleared under the Housing Act, 1930; and how many houses had been constructed up to date under this Act.—Mr. CHAMBERLAIN replied: The returns made to me do not show the number of areas cleared. Up to June 30th last 87 unfit houses in clearance areas and 13 unfit houses in improvement areas had been demolished. Up to August 31st last 278 houses had been completed under the Housing Act, 1930.

Coroners and Reports on Road Accidents.

Mr. DAY asked the Home Secretary if he would arrange for a system whereby the circumstances of every fatal road accident in respect of which an inquest was held should be reported by the coroner concerned for the purpose of tabulating the causes of such accidents and the consideration of methods of avoiding them.—Sir H. SAMUEL replied: It is not necessary to put this duty on coroners. There are other means of obtaining the information. The questions involved are being considered by a departmental committee set up by the late Minister of Transport.

Number of Persons Paying Income-tax.

Miss LAWRENCE asked the Chancellor of the Exchequer the number of persons entirely relieved from income-tax by the operation of allowances and abatements and the number chargeable with tax before and after the operation of the new regulations.—Mr. SNOWDEN replied: On the existing basis of taxation it is estimated that about 5,250,000 persons come under review for income-tax purposes, of whom about 3,000,000 are entirely relieved by the various allowances, leaving 2,250,000 actually paying tax. It is very difficult to forecast the effect on these numbers of the changes proposed in the Budget, but it is estimated that the effect will be to increase the numbers actually paying tax by between 1,500,000 and 2,000,000 persons.

Rent Restriction Acts.

Sir CHARLES TREVELYAN asked the Minister of Health whether it was the intention of the Government to continue the Rent Restriction Act by means of another Expiring Laws Continuance Act or to initiate fresh legislation; and, if the latter, whether the proposals they would introduce would follow the recommendations of the recent Committee on Rent Restriction.—Mr. CHAMBERLAIN replied: It is proposed to extend the existing Acts by means of the Expiring Laws Continuance Act.

Milk for Necessitous Mothers.

Dr. PHILLIPS asked the Minister of Health whether, in view of the proposed reductions in the amount of unemployment benefit, he would advise local authorities to extend the provision now made by them for supplying milk to necessitous mothers and children.—Mr. CHAMBERLAIN replied: I do not think it is necessary for me to address any special communication to local authorities on this subject. The extension of this service is now a matter within the discretion of these authorities, and in considering the question they will no doubt pay regard to such circumstances as are mentioned in Circular 1222, and in particular to the question

whether an extension of the service is required on urgent grounds of public health.

Dr. PHILLIPS: Does not the circular to which the right hon. gentleman refers urge not extensions but economies in this service, and in that case would the local authorities not take it to mean that they are advised against extensions, and that they ought not to think of making them unless they are told that they will be considered suitable exceptions?

Mr. CHAMBERLAIN: No, I do not think that that would be a fair interpretation of the circular.

Maternity Services and Economy.

Dr. PHILLIPS asked the Minister of Health whether Circular 1222, issued on Sept. 11th, 1931, urging local authorities to make further economies in their work, was to be taken by them as superseding the circular issued in December, 1930, urging them to extend their work for the saving of maternal and infant life.—Mr. CHAMBERLAIN replied: The answer is in the negative. The view of the Government, as stated in Circular 1222, is that local authorities, in considering whether development of any services cannot safely and properly be slowed down till better times, should pay special regard, inter alia, to the question whether a service is required on urgent grounds of public health. It will be for each local authority to consider, by reference to the relevant circumstances of its area and to the stage of development already reached, whether further development of its maternity services is required at the present time.

Dr. PHILLIPS: Does the right hon. gentleman propose to carry out the intention of his predecessor in inquiring from those authorities who have not yet answered this circular what they intend to do; and whether it is not more likely that after the second circular they will drop the matter altogether?

Mr. CHAMBERLAIN: I cannot answer as to what the intention may be.

Miss WILKINSON: In view of the fact that the last published returns of maternal mortality show the lowest figure yet reached in this country, will the right hon. gentleman call the attention of the local authorities to the advisability of maintaining that record?

Mr. CHAMBERLAIN: The circular was issued by my predecessor as lately as December of last year. I have no reason to suppose that the local authorities are not giving their close attention to the subject.

Miss WILKINSON: Does the right hon. gentleman's answer mean that he desires local authorities to make no change in the policy that was being pursued under the circular to which he refers?

Mr. CHAMBERLAIN: There is no change in the policy.

Mr. THOMAS LEWIS asked the Minister of Health whether, having regard to the number of preventable deaths of mothers during childbirth, it was the intention of the Government to proceed with the scheme for the development of the maternity service now before the Ministry of Health.—Mr. CHAMBERLAIN replied: I assume that the hon. Member is referring to the maternity scheme which was considered by the Committee on National Expenditure. That scheme could not in any event be brought into effect for a considerable period. In the circumstances progress will have, in the immediate future, to depend on the development of the maternity services to which I have referred in the answer given to the hon. Member for Sunderland.

Prolongation of Health Insurance.

Mr. THOMAS LEWIS asked the Minister of Health if he proposed to bring in legislation extending the provisions of the National Health Insurance (Prolongation of Insurance) Act, 1930; and, if not, what other steps he proposed to take to meet the position of unemployed persons who would normally go out of insurance on Dec. 31st, 1931.—Mr. CHAMBERLAIN replied: The matter is under consideration, but I am not yet in a position to make a statement as to the steps which will be taken.

MONDAY, SEPT. 21ST.

Factory and Workshop Inspection.

Major EVANS asked the Home Secretary whether he could furnish the number of factories and workshops not visited for one, two, or three years up to December, 1930.—Sir HERBERT SAMUEL gave the following figures:—

	Registered at end of 1930.	Not visited 1930.	Not visited 1930 or 1929.
Factories	154,102	36,169	4,304
Workshops ..	103,371	49,401	20,119

Figures are not available for the numbers not visited in 1928, 1929, or 1930.

Manufacture of Narcotic Drugs.

Mr. CAMPBELL asked the Home Secretary whether any report had been received from the British delegate to the international conference recently held at Geneva in reference to the limitation of the manufacture of narcotic drugs; and whether the scheme advocated by him and by the advisory opium committee for apportioning quotas of the world's requirements of such drugs among the producing countries was adopted by the conference.—Mr. OLIVER STANLEY (Under Secretary for the Home Office) replied: Yes, sir, the British delegate has informed His Majesty's Government of the proceedings at the conference. The scheme of limitation which was prepared by the advisory committee and which he was authorised by His Majesty's Government to support was not adopted by the conference.

Workmen's Compensation Medical Referee.

Dr. FORGAN asked the Secretary of State for Scotland why the office of medical referee under the Workmen's Compensation Acts for the county of Lanark, advertised by the department two years ago, had not yet been filled.—Sir HERBERT SAMUEL (Home Secretary) replied: The hon. Member is apparently referring to a vacancy advertised in 1927, which it was subsequently decided not to fill. It was considered at the time that a further appointment was not necessary; and I am advised that the present panel of referees for the county is still adequate for the work.

TUESDAY, SEPT. 22ND.

National Maternity Service.

Dr. PHILLIPS asked the Minister of Health whether he was continuing the negotiations commenced by his predecessor on the subject of a national maternity service; and, if so, when he expected to complete them.—Sir K. WOOD (Parliamentary Secretary to the Board of Education) replied: The action taken by my right hon. friend's predecessor was in the first instance to bring this question before the Approved Socities' Consultative Council. The Council appointed a subcommittee, the report of which is being awaited. As regards the second question, my right hon. friend regrets that, like his predecessor, he is unable to give any definite date.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, Wimpole-street, W.

MONDAY, Sept. 28th to SATURDAY, Oct. 3rd.—METROPOLITAN HOSPITAL, Kingsland-road, E. Course in medicine and surgery. Daily 10.30 A.M. to 5.30 P.M. Demonstrations, lectures, hospital practice.—CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd-street, W.C. Course in Ophthalmology. Every afternoon, lecture-demonstrations.—Further particulars from the Fellowship of Medicine.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Oct. 2nd.—4 P.M., Mr. J. D. McLaggan: Tuberculosis of the Larynx.

ST. MARK'S HOSPITAL, City-road, E.C.

TUESDAY, Oct. 1st.—4.30 P.M., Sir Charles Gordon-Watson: Results of Radium Treatment for Carcinoma of the Rectum.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL, Elizabeth-street, Manchester.

WEDNESDAY, Sept. 30th.—4.30 P.M., Dr. H. R. Clarke: The Significance and Treatment of High and Low Blood Pressure.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.

TUESDAY, Sept. 29th.—4.15 P.M., Mr. W. R. Douglas: Surgery of the Common Bile-duct.

FRIDAY, Oct. 2nd.—4.15 P.M., Mr. H. H. Rayner: Demonstration of Surgical Cases.

A HERTFORDSHIRE CONTRIBUTORY SCHEME.—The St. Albans and mid-Herts hospital contributory scheme will not be a year old until Oct. 1st, but it has already enrolled 3000 members. On the basis of this membership it is computed that the amount available for the St. Albans Hospital will be about £1500 per annum.

MEDICAL NEWS

London Hospital Medical College.

The Schorstein Memorial Lecture will be delivered by Dr. Arthur J. Hall, professor of medicine in the University of Sheffield on Thursday, Oct. 15th, at 4.15 P.M. in the Bearsted clinical theatre. His subject will be Chronic Epidemic Encephalitis. All members of the profession are invited to attend.

Hampstead General Hospital.

A series of lectures has been arranged at the Hampstead General and North-West London Hospital. They will be given at 4 P.M. on Wednesdays from Oct. 7th, when Sir William Willcox will speak on Diabetes: its Causation and Treatment, with special reference to toxic causes. The Dean of the post-graduate school is Mr. Clifford Morson, from whom particulars may be obtained.

Diagnosis and Treatment of Venereal Diseases.

A course of instruction in this subject will be given by the public health department at Salford from Oct. 8th onwards. It consists of 15 lectures and demonstrations at the municipal clinic, 155 Regent-road. Particulars may be had from the medical officer of health for the city.

Manchester Royal Infirmary.

Members of the honorary staff of this hospital will give post-graduate lectures on Medical, Surgical, and Special Subjects on Tuesdays from Sept. 29th to Dec. 15th (except Nov. 10th) and demonstrations on Clinical Cases on Fridays from Oct. 2nd to Dec. 11th. All meetings begin at 4.15 and are free. Details may be obtained from the secretary for the post-graduate lectures. The Manchester Lloyd Roberts Lecture will be given by Prof. W. Blair Bell, of Liverpool at St. Mary's Hospital, Whitworth-street, on Nov. 10th at 4.15 P.M.

Medical Industrial Psychology.

At the London School of Hygiene and Tropical Medicine a course of 20 lectures on the History and Practice of Medical Industrial Psychology is to be given during the next three months. It will open on Oct. 1st with an inaugural lecture by Dr. Millais Culpin, newly appointed professor of medical industrial psychology in the University of London. Nine of the remaining lectures will also be given by Prof. Culpin, the others being contributed by Prof. Major Greenwood, F.R.S., Miss May Smith, D.Sc., and Mr. Eric Farmer. They fall into three sections, devoted to historical background, modern methods of study and research, and particular problems. The course as a whole is designed to meet the requirements of students for the University Diploma in Psychology, and for the degree of Ph.D. in medicine (non-clinical subjects). Each lecture will be given at the School at 5 P.M., usually on Thursdays and Fridays. Admission to the first lecture, at which Air Vice-Marshal Sir David Munro is to preside, will be free.

Fellowship of Medicine and Post-Graduate Medical Association.

At the Metropolitan Hospital, Kingsland-road, there will be a course in medicine and surgery from Sept. 28th to Oct. 10th (10.30 A.M. to 5.30 P.M. daily). The Prince of Wales's Hospital, Tottenham, will give a similar course from Oct. 12th to 24th. The subjects of other courses in October include cardiology at the National Heart Hospital (Oct. 12th to 24th); diseases of the ear, nose, and throat, at the Central London Throat, Nose, and Ear Hospital (Oct. 5th to 31st, with various sections which may be taken separately); tropical medicine at the Hospital for Tropical Diseases (Oct. 5th to 24th); dermatology at St. John's Hospital (Oct. 12th to Nov. 7th); gynæcology at Chelsea Hospital for Women (Oct. 12th to 24th); and diseases of children at Hospital for Sick Children (Oct. 19th to 31st). Evening lectures, intended primarily for candidates for the M.R.C.P. examination, will be held at the Medical Society lecture room on Mondays and Wednesdays at 8.30 P.M. Free lectures will be given at the Medical Society lecture room on Wednesdays at 4 P.M., and free clinical demonstrations in medicine and surgery weekly at various hospitals. Copies of syllabuses may be had from the Fellowship at 1, Wimpole-street, London, W.1.

Hospital Wards from a Cinema Fête.

The old children's ward at the Weston-super-Mare General Hospital have been converted into six private cubicle wards and two double wards, which were formally opened last week by Mr. P. E. Russell, chairman of the executive committee. The accommodation is thus increased 104 beds.

A Farmers' Bed.

At Leicester Royal Infirmary a bed has been endowed by the farmers of the county in memory of Miss Ethel May James, the first secretary of the Leicestershire branch of the National Farmers' Union. The infirmary last week commemorated the 160th anniversary of its foundation by the Rev. William Watts.

Hospital Accommodation at Bath.

Dr. J. F. Blackett, medical officer of health for Bath, reports that the hospital accommodation of the city is as follows: Royal United, 140 beds; Mineral Water, 156; Ear, Nose, and Throat, 50; Eye, 22; Children's Orthopædic, 72; Forbes Fraser, 72; Statutory Isolation, 70; Frome-road Infirmary, 371; Maternity Home, 5.

Royal Waterloo Hospital.

Last year this hospital for women and children received 2095 in-patients and 15,609 new out-patients, who made 72,211 attendances, the largest number since the opening of the institution in 1818. The expenditure of £23,032 exceeded the income by £668, and there is now a deficit of £3465. There is acute need of extension, but the board have felt that it would be unwise to take any action until a final decision as to the removal of Charing Cross Station to the south side of the Thames had been reached, since the adoption of the proposal would have placed the new station in close proximity to the hospital.

Births, Marriages, and Deaths

BIRTHS.

ALCOCK.—On Sept. 19th, at Western Elms Lodge, Reading, the wife of Dr. S. C. Alcock, of a son.

CALDWELL.—On Sept. 14th, the wife of Robert S. Caldwell, M.B., New Milton, Hampshire, of a daughter.

HACKWOOD.—On Sept. 15th, at Ninhams Lodge, Farnborough, Kent, the wife of Dr. John F. Hackwood, of a son.

POTTS.—On Sept. 21st, at The Gables, Bracknell, the wife of Dr. C. Potts, of a son.

MARRIAGES.

BOLAND—SCOTT.—On Sept. 11th, at St. James's, Spanish-place, Edward Rowan Boland, M.R.C.P., M.R.C.S., D.P.H., to Barbara Scott.

FAIRBROTHER—TUPPEN.—On Sept. 16th, at Hambleton Church, Lancaster, Dr. Ronald Wilson Fairbrother to Peggy Lewis Tuppen, of Ryecroft, Hambleton, only daughter of the late Mrs. Tuppen and of Mr. J. H. Tuppen, of Bedford-row, London.

GOODING—PROTHEROE.—On Sept. 21st, 1931, in London, Stanley Gooding, M.D. Cantab., elder son of Mr. and Mrs. F. C. Gooding, of Buckhurst Hill, to Margaret, daughter of Mr. G. Protheroe, of Manorbier, Pembrokeshire.

LOTHIAN—MCLAREN.—On Sept. 15th, at Tron Church, Edinburgh, Douglas B. M. Lothian, M.B., Ch.B., M.R.C.P.E., D.P.M., Rampton State Institution, Notts, to Mary Evelyn McLaren, M.B., Ch.B., D.Psych., only daughter of Dr. and Mrs. John McLaren, Lauriston-place, Edinburgh.

MACBETH—MACDONALD.—On Sept. 12th, at Highgate Presbyterian Church, Ronald Græme Macbeth, B.M., M.R.C.S., to Margaret Raff, elder daughter of Mr. and Mrs. D. W. Macdonald, of Highgate.

MARSHALL—HEXT.—On Sept. 17th, at Christ Church, Virginia Water, Leslie Phillips Marshall, M.C., M.B., B.Chir., to Catherine Mary Hext.

TENNENT—GALE.—On Sept. 19th, at Christ's Church, Esher, Thomas Tennent, M.D., M.R.C.P., to Mildred Evelyn, daughter of Mr. and Mrs. Gale, Gayton, Esher.

TRACEY—SCOTT.—On Sept. 15th, at All Saints', Postwick, Basil Martin Tracey, M.B., F.R.C.S., to Katherine Reavell Scott, daughter of Mr. and Mrs. W. Harding Scott, of Oaklands, Thorpe St. Andrew, Norwich.

DEATHS.

BALDWIN.—On Sept. 20th, in hospital at Vannes, France, Sir Harry Baldwin, Kt., C.V.O., M.R.C.S., L.D.S., Hon. Surgeon-Dentist to the King, of Castle House, St. Helens, Isle of Wight, aged 68.

BIRD.—On Sept. 15th, at Farleigh-road, N., after a long illness, Henry Bird, M.R.C.S., L.R.C.P.

BRADLEY.—On Sept. 21st, at Guy's Hospital, following an operation, Frank William Bradley, M.B., B.S., D.P.H., of Manor-road, Mitcham, Surrey, and "Shirley," Cross Deep, Twickenham.

COLLIER.—On Sept. 20th, at his residence, Kearsney Abbey, Kent, Mark Purcell Mayo Collier, M.S. Lond., F.R.C.S. Eng., aged 74.

DAY.—On Sept. 13th, at Ealing, Amelia Frances, widow of William White Day, M.D., in her 90th year.

SIMPSON.—On Sept. 20th, Sir William Simpson, M.D., F.R.C.P., Director of Tropical Hygiene at the Ross Institute, aged 76.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

A FAMOUS TRIAL RECALLED.

Serjeant Ballantine wrote in his Reminiscences that the speculations of scientific men, however eminent, ought never to be made the basis of a criminal prosecution. He had in mind the once-famous trial of Thomas Smethurst, now reprinted in the "Notable British Trials" series, with an admirable introduction by Dr. Leonard Parry.[1] Ballantine had himself prosecuted Smethurst for the murder of Isabella Bankes, and had secured his conviction in spite of a strange error by the chief medical witness for the Crown. Ten doctors thought death was due to poisoning, seven thought the symptoms sufficiently explained by dysentery and pregnancy. If the medical practitioners called by the prosecution were wrong, it was another medical practitioner who put matters right. Acting at a period some 60 years before the constitution of a Court of Criminal Appeal, the Home Secretary, impressed by the outburst of criticism evoked by the verdict, referred the proceedings to Sir Benjamin Brodie, the foremost surgeon of the day. On Brodie's advice, Smethurst received a free pardon. To Lord Chief Baron Pollock, who had tried the case, the Home Secretary explained that the necessity for the pardon arose not from any fault in the tribunal but "from the imperfection of medical science and from the fallibility of judgment, in an obscure malady, even of skilful and experienced medical practitioners." The medico-legal interest of the trial is thus obvious. We may, perhaps, be forgiven for adding that Smethurst, himself a medical practitioner, had been a contributor to our columns. It has even been suggested, as will presently be seen, that he learnt from THE LANCET how a poisoner might escape the gallows.

In December, 1858, Dr. Thomas Smethurst, who had retired from practice, left his elderly wife and went off to live with Miss Isabella Bankes, first going through a form of bigamous marriage with her. Next March Miss Bankes began to suffer from violent diarrhœa and vomiting. Smethurst, nursing her with apparent devotion, called in Dr. Julius (a local practitioner with a Lambeth doctorate in medicine), Dr. Bird (Julius' partner), and finally, by way of special opinion in a difficult case, Dr. Todd, physician to King's College Hospital. The patient grew no better. Julius, suspecting wilful poisoning, had one of the evacuations analysed by Dr. Alfred Swaine Taylor, Professor of Chemistry at Guy's Hospital, who found arsenic. Smethurst was arrested, but, strangely enough, was forthwith released to return to the bedside of his supposed victim. Next day she died, and Smethurst was arrested afresh on a charge of murder, on which he was found guilty. The fact told against him that, a fortnight before her death, he brought a solicitor to Miss Bankes one Sunday morning to make a will which left him most of her property. The judge dwelt rather heavily on the immorality of Smethurst's domestic life and on the wickedness of fetching a lawyer rather than a clergyman to the dying woman. But it could be said in Smethurst's favour that, if he stood to gain £1800 by the will, he stood to lose the income on £5000 in which she had a life interest. As for the poisoning, the Crown witnesses suggested repeated doses of some irritant poison. But no arsenic was found in the body, and only from a quarter to a half a grain of antimony. No arsenic or antimony was found in Smethurst's possession, or in his house, or in any of the food. Ballantine, in his final address to the jury, admitted that the prosecution did not pretend to say positively that death was due either to antimony or arsenic; all they said was that death was due "to some poison or other."

It seems incredible nowadays that such a prosecution could have succeeded. Its prospects had been gravely prejudiced by Dr. Taylor's famous mistake. He had examined various bottles found in Smethurst's room. In one bottle Taylor discovered arsenic. So, at any rate, he swore at the police-court proceedings, and so his assistant swore at the inquest. Taylor later found that this arsenic was due to an impurity in the copper gauze used in his tests. The instrument employed for detection had itself furnished the poison. He corrected his mistake before the trial at the Old Bailey, but critics were not slow to point out that his error might well have hanged the accused. Ballantine's Reminiscences half hint that Smethurst laid a trap for the Crown witnesses by arranging the contents of the bottle between his first and second apprehensions. An ingenious speculation was built upon the fact that Smethurst wrote some notes "On the Excision of Teeth," which were published in THE LANCET in June, 1844. Our issue of that date contained one of a series of articles by Fresenius on the detection of poisons in medico-legal inquiries. It was suggested that Smethurst learnt from these articles that Reinsch's test for arsenic was untrustworthy in the presence of chlorates, and that he deliberately gave chlorate of potassium to Miss Bankes to defeat the usual test. Dr. Leonard Parry rejects the suggestion on three grounds. Smethurst could not be sure that Taylor would (as he did) employ Reinsch's method only; chlorates might not have destroyed the value of the test entirely; finally, Fresenius had recommended as the best method for detecting arsenic a test which involved adding chlorate of potassium; if such a method had been used, Smethurst might have been contributing to his own downfall. While in gaol awaiting trial, Smethurst sent a letter to THE LANCET fully discussing the medical aspects of the case. This was naturally withheld from publication while his defence was in the hands of his legal advisers, but it was printed after the trial in our issue of Sept. 3rd, 1859. In commenting on the verdict, we observed that the main point on which satisfaction was required was whether the medical and chemical evidence was sufficient to prove that Smethurst committed murder. Dr. Parry, in a careful analysis of the case, thinks, like Sir Benjamin Brodie, that the evidence failed to prove guilt. Lord Chief Baron Pollock, in a final letter to the Home Secretary, objected that Brodie had taken no account of the suggestion that Smethurst's motive was to procure abortion—a point little mentioned at the trial. In the mass of interesting contemporary comment reprinted by Dr. Parry is a letter criticising the medical education of the day for its inattention to midwifery. The pregnancy of Isabella Bankes, a possible explanation of many of her suspicious symptoms, apparently took the practitioners by surprise; one medical witness after another had said that he "never studied that branch." It is clear from other letters that the medical profession had misgivings about the part it played in the Smethurst proceedings.

Just when public opinion and the reprieve seemed to be rehabilitating Smethurst's character, he was put upon his trial for bigamy. A too confident reference by his counsel to the pardon in respect of the murder charge drew from Baron Bramwell the dictum that a pardon is no more a certificate of innocence than a jury's verdict of "not guilty." Although Smethurst was sentenced to a year's hard labour for the bigamy, he had, in one sense, the last word with the law. Not long after he came out of prison, he succeeded in proving Isabella Bankes's will.

[1] Trial of Dr. Smethurst (Notable British Trials). Edited by Leonard A. Parry, M.D., B.S., F.R.C.S. Edinburgh and London: Wm. Hodge and Co. Pp. 259. 10*s*. 6*d*.

IT is proposed to endow a bed in the Royal Mineral Water Hospital, Bath, as a memorial to the late Mr. Frederic Weatherly, K.C., who is more widely known as the writer of songs than as a lawyer.

FOREIGN-MADE FINE CHEMICALS.

THE QUESTION OF EXEMPTION FROM DUTY.

UNDER Section 10 (5) of the Finance Act, 1926, the Treasury may exempt from the duty imposed by the Safeguarding of Industries Act, 1921, any article in respect of which the Board of Trade are satisfied that it is not made in any part of H.M. Dominions in quantities which are substantial having regard to the consumption of that article for the time being in the United Kingdom, and that there is no reasonable probability of the article being so made within a reasonable period. Orders Nos. 2 and 3, 1930, and Nos. 1, 2, and 3, 1931, exempted from duty until Dec. 31st, 1931, the articles mentioned in the following list:—

acid adipinic
acid isobutyl allyl barbituric
acid lactic which satisfies B.P. requirements
acid oxalic
acid propionic
amidopyrin (pyramidon; dimethyl-amidoantipyrine)
ammonium perchlorate
barbitone (veronal; malonal; malourea; acid diethyl barbituric, diethylmalonyl-urea; hypnogen, deba)
bromural (dormigene)
butyl methyl adipate
calcium gluconate (calcium glyconate)
celtium oxide
chinoline (quinoline)
chinosol
cocaine, crude
dial (acid diallyl barbituric)
dicyandiamide
didial (ethyl morphine diallyl barbiturate)
diphenyl
diphenyl oxide
dysprosium oxide
elbon (cinnamoyl para oxy-phenyl urea)
erbium oxide
ethylene bromide
eukodal
europium oxide
furfurol
gadolinium oxide
germanium oxide
glycol ethers
guaiacol carbonate (duotal)
holmium oxide
hydroquinone
integrators (planimeter type)
R. lead acetate
lead tetræthyl
lipoiodin
lutecium oxide
mercury vapour rectifiers having mercury cathodes
metaldehyde
methyl cyclohexanol methyl adipate
methyl sulphonal (diethyl-sulphonemethylethyl-methane, trional)
methylene chloride
neodymium oxide
nickel hydroxide
oxymethyl paraoxyphenyl benzylamine methyl sulphate
papaverine
phenacetin (acetparaphenetidine)
phenazone (antipyrine; phenyl dimethylpyrazolone; analgesin; anodynine; dimethyl oxychinizin)
phenetidine, para-
phytin
piperazine (diethylenediamine; dispermin)
planimeters
R. potassium chlorate
potassium ethylxanthogenate (potassium xanthogenate)
potassium guaiacol sulphonate (thiocol)
R. potassium hydroxide (R. potassium caustic; R. potassium hydrate)
R. potassium permanganate
praseodymium oxide
pyramidon-veronal
quinine ethyl-carbonate
radium compounds
resorcine (resorcinol)
salol (phenyl salicylate)
samarium oxide
scandium compounds
sodium ethyl methyl butyl barbiturate
strontium carbonate
strontium nitrate
styracol (guaiacol cinnamate)
sulphonal
synthalin
terbium oxide
thulium oxide
urea (carbamide)
vanadium-silica compounds specially prepared for use as catalysts for sulphuric acid manufacture
ytterbium oxide
yttrium oxide

The Board of Trade is now considering the question of renewing these exemptions. Communications should be addressed before Oct. 16th to the principal assistant secretary, Industries and Manufacturers Department, Board of Trade, Great George-street, London, S.W.1.

DEVELOPMENT OF SCHOOL CHILDREN IN KENYA.

Dr. G. M. Hargreaves [1] has investigated the height and weight of children in Kenya, and finds that with one exception they surpass English children in these respects. He believes that climatic conditions in the Colony tend to produce heavier and taller children than those bred in England. This is in harmony with similar findings elsewhere, for in Kerr's Fundamentals of School Health it is noted that the British descendants in the elementary schools of New South Wales are equal in weight and height for age to the secondary and public school pupils of the mother country. The Indian boys of Kenya are much better off in weight and height than those living in the densely populated city of Bombay, the reasons for this being fairly obvious. Another noteworthy feature is the earlier age at which the girls in Kenya begin to outstrip the boys both in height and weight. In height they take the lead at 8 and are not passed by the boys until the age of 14, the corresponding dates in England being 11 and 14. In weight the Kenya girls lead at 8 and the boys do not pass them till 16, while in England the superiority of the girls lasts only from 11 till 15.

It would, of course, be expected that the greater the proportion of children who were born or had lived much of their lives in Kenya, the more would the influence of the new environment be shown. Six years ago, Dr. de Boer found the age when the girls took the lead to be 9 instead of 8, while Dr. M. MacKinnon, some seven years ago, put it at 10. Dr. de Boer [2] was inclined to regret the precocious development on racial grounds, while Dr. MacKinnon believed it to be associated with mental deterioration. The diminution of the power of mental application when a child is growing rapidly in height is a well-known phenomenon, but as a rule it is not associated with gain in weight. Dr. Hargreaves could find no evidence of inferior intelligence in the reports from the Education Department. He makes some observations on the incidence of dental caries, though he confesses that his figures are not sufficiently exact for statistical purposes. In his experience, dental caries is higher in Mohammedans than in Hindus; among the Arabs and Africans it was higher in those who lived in the coast towns, while at a "reserve" school 30 miles from the nearest town no cases of caries were found. Dr. Hargreaves has noticed that in the African the occurrence of caries usually begins at a much later age than in Europeans. In connexion with defective vision, he says that among 600 up-country natives he found no case where the vision was less than 6/6 on account of errors of refraction, but in Indian children he found acute progressive myopia to be specially common. Several of his findings are suggestive, though the numbers are comparatively small and the records need confirmation by exact physical and mental measurement.

[1] Kenya and East Africa Med. Jour., August, 1931, p. 124.

PRISON DIETARIES IN THE UNITED STATES.

WITH the passing of the view that retributive punishment is the only function of imprisonment, there has naturally appeared an amelioration of the conditions of life of prisoners in all civilised countries. More and more attention is now paid to the nutritional requirements of prisoners, just as it is to their other physical and psychological needs. It is not surprising, therefore, that the adequacy of existing prison dietaries should be reviewed from time to time in the light of modern views on nutrition. Such a review has just taken place in the United States.[3] Investigations were made of the food consumption of prisoners in five Federal prisons. The average daily calorie value of the food supplied varied from 4000 to well over 5000. The amount of protein ranged from 106 to 208 g. and that of fat from 118 to 209 g. In some prisons as much as one pound of food per man per day was wasted, and in general an ample quantity was available for men doing a hard day's work. From a qualitative point of view the diets seemed fairly satisfactory. The vitamin content was moderately good, but the amount of calcium tended sometimes to be rather low. The chief complaint of the

[2] Ibid., December, 1924.

[3] Howe, P. E., and MacCormick, A. H.: Amer. Jour. Pub. Health, 1931, xxi., 993.

prisoners themselves was of the monotony of the menus, and the view is expressed in the report that it would be a sound policy to encourage as great a variety as possible in the choice of foods. The present rationing system is a purely arbitrary one, based on previous experience of costs, which vary widely in different prisons. It is intended to evolve a more uniform system, based on the calculated cost of providing satisfactory dietaries in the modern sense of the term. The production of vegetables and milk at the prison farms will be encouraged to an even greater extent than obtains at the present time. It is proposed to arrange a scheme of redistribution whereby produce that can easily be raised at one prison farm may be canned and sent to another prison where its production is less satisfactory.

CLIMATE FOR EMPHYSEMA.

A CORRESPONDENT ("Stethos") writes: "Would anyone kindly mention the most suitable (and economical) place on the south coast—between Dover and Penzance—for an old gentleman with bronchitis, emphysema, bronchial asthma, and hypertrophy of the right ventricle, who dreads the cold and damp of the autumn, winter, and spring?"

PRESCRIPTIONS FOR THE DEAF.

Captain L. V. Kahn-Rein writes to say that his firm (Messrs. F. Charles Rein and Son, 30, Charing Cross-road, London, W.C. 2) have for the last eight years built instruments to an otologist's specification, with the assistance of an audiogram registering the hearing capacity of the patient. His interest in the matter dates from a visit to America in 1922 when he had the opportunity of seeing audiometer tests carried out in grading the hearing capabilities in school-children. His firm is able to register the performance of any hearing device on a photographic film strip.

Appointments

BEGG, A. C., M.D., Ch.B. Edin., M.B. Lond., and WOODS, W. H. O., M.B., B.Ch. Camb., F.R.C.S. Edin., Medical Referees under the Workmen's Compensation Act for the Districts of the Aberayron, Cardigan, Carmarthen, Llandilo Fawr and Ammanford, Lampeter, Llandovery, Llanelly, Newcastle-in-Emlyn, Neath and Port Talbot County Courts.

HADDOW, W., M.B., Ch.B. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Kirkham District of the County of Lancaster.

Vacancies

For further information refer to the Advertisement columns.

Aberdeen Royal Mental Hospital.—Second Asst. Phys. £400.
Aberdeen, Woodend Municipal Hospital.—Jun. Res. M.O. £100.
***Altrincham General Hospital.*—Jun. H.S. At rate of £120.**
Ayr County Hospital.—H.S. At rate of £150.
Banbury, Horton General Hospital.—Res. M.O. At rate of £150.
Bangor, Carnarvonshire and Anglesey Infirmary.—Res. H.S. and Jun. Res. H.S. £150 and £100 respectively.
Beckenham, Kent, Bethlem Hospital, Monks Orchard, Eden Park. Res. H.P. At rate of £150.
***Bedford County Hospital.*—Asst. H.S. At rate of £130.**
Belgrave Hospital for Children, Clapham-road, S.W.—Two H.P.'s. Each at rate of £100.
Benenden, Kent, National Sanatorium.—Res. Asst. M.O. £300.
Birmingham, Public Health Dept.—Asst. M.O. for Tuberculosis Section. £400.
Birmingham, Selly Oak Hospital.—Cas. O. At rate of £200.
Bolingbroke Hospital, Wandsworth Common, S.W.—H.S. At rate of £120.
Bradford, Royal Eye and Ear Hospital.—Jun. H.S. £150.
Bristol City and County Mental Hospital.—Third Asst. M.O. £450.
Bristol Eye Hospital.—Res. H.S. £500.
Cardiff, King Edward VII. Welsh National Memorial Assn.—Two Area Tuberculosis Physicians. Each £750.
Cardiff Royal Infirmary.—Two H.S.'s to Special Departments. Also H.P. and H.S. All at rate of £50.
Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Assts. for Out-patient Dept.
Cheadle, Cheshire, Barnes Convalescent Hospital.—Res. M.O. £250.
Chester Royal Infirmary.—H.P. and two H.S.'s. Each £150.
City of London Hospital for Diseases of Heart and Lungs, Victoria Park, E.—H.P. At rate of £100.
Colchester, Essex County Hospital.—Asst. H.S. and Registrar. £120.
Denbigh, North Wales Sanatorium, Llangwyfan.—Jun. Asst. Res. M.O. £250.
Dewsbury and District General Infirmary.—H.S. and Second H.S. £200 and £150 respectively.
Exeter, Royal Devon and Exeter Hospital.—Cas. O. and H.S. to Special Depts. Each at rate of £150.
Folkestone Royal Victoria Hospital.—Jun. Res. M.O. At rate of £100.
Gateshead Dispensary.—Asst. M.O. £300–£350.
Glamorgan County Mental Hospital, Bridgend.—Jun. Asst. M.O. £350.
Golden-square Throat, Nose, and Ear Hospital, W.—Hon. Surgeon and Hon. Asst. Surgeon.
Harrogate Infirmary.—H.P. and Jun. H.S. At rate of £150 and £140 respectively.
Hereford County and City Mental Hospital.—Med. Supt. £600
Hereford, Herefordshire General Hospital.—H.S. £150.
Hospital for Sick Children, Great Ormond-street, W.C.—H.P. At rate of £100. Clin. Asst. Also Med. Reg. £250.
Hospital for Women, Soho-square, W.—Res. M.O. At rate of £100.
Hull Maternity Home and Infants' Hospital.—Sen. Res. M.O. £450.
Leeds, General Infirmary.—Hon. Asst. Orthopædic Surgeon.
Leicester Royal Infirmary.—Two Surgical Dressers. 10*s.* 6*d.* per week.
Leyton Borough.—Deputy M.O.H., &c. £660.
***Liverpool Eye and Ear Infirmary, Myrtle-street.*—H.S. to Ophth. Dept. £120.**
London Female Lock Hospital, Harrow-road, W.—H.S. At rate of £150.
London Homœopathic Hospital Great Ormond-street, W.C.—Asst. Physician.
Macclesfield General Infirmary.—Second H.S. At rate of £150.
Maidstone, Kent County Ophthalmic and Aural Hospital.—H.S. At rate of £200.
***Manchester Royal Eye Hospital.*—Jun. H.S. £120.**
Manchester Royal Infirmary, Robey-street.—H.S. At rate of £100–£200.
Manor House Hospital, Golders Green, N.W.—M.O. to Out-patients. 1½ gns. per session.
Metropolitan Ear, Nose and Throat Hospital, 2, Fitzroy-square, W.—Anæsthetist.
Metropolitan Hospital, Kingsland-road, E.—Sen. and Jun. H.P.'s and H.S.'s. Also Two H.S.'s. All at rate of £100.
Middlesex County Council, County Tuberculosis Sanatorium, South Mimms.—Asst. Res. M.O. £400.
National Hospital, Queen-square, W.C.—Asst. Registrar. £200.
Newcastle-upon-Tyne, Hospital for Sick Children.—H.S. At rate of £100.
Norwich, Norfolk and Norwich Hospital.—H.S. for Ear, Nose, and Throat. £120.
Nottingham General Hospital.—H.P. At rate of £150.
Paddington Green, Children's Hospital, W.—H.P. and H.S. Each at rate of £150.
Portsmouth, St. Mary's Hospital, St. Mary's Institution, &c.—Third Asst. Res. M.O. £250.
Preston and County of Lancaster Royal Infirmary.—H.S. and Cas. O. Each at rate of £150.
Queen Mary's Hospital for the East End, E.—Surgical and Dental Anæsthetists. 50 guineas and £25 respectively.
Queen's Hospital for Children, Hackney-road, E.—Surgeon to Ear, Nose and Throat Department.
Richmond, Surrey, Royal Hospital.—Hon. Surg. to Ear, Nose, and Throat Dept.
Rochdale Infirmary and Dispensary.—Jun. H.S. £200.
Royal Free Hospital, Gray's Inn-road, W.C.—Res. Cas. O. At rate of £150.
Royal National Orthopædic Hospital, 234, Gt. Portland-street, W.—Hon. Asst. Surgeon.
St. Helens County Borough.—Asst. M.O.H. £500.
St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Hon. Jun. Med. Reg.
St. Mary's Hospital for Women and Children, Plaistow, E.—Res. and Asst. Res. M.O.'s. At rate of £175 and £120 respectively.
***Sheffield Royal Hospital.*—Ophth. H.S. Also Anæsthetist. £120 and £80 respectively.**
Southampton Children's Hospital and Dispensary for Women.—Res. M.O. At rate of £100.
Stafford, Staffordshire General Infirmary.—H.P. At rate of £150.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—Asst. H.P. £125.
Taunton and Somerset Hospital.—Asst. H.S. At rate of £100.
University College Hospital, Gower-street, W.C.—First Asst. for Children's Dept. £250.
Wakefield, Middleton-in-Wharfedale Sanatorium, near Ilkley.—Res. M.O. £250.
Warwick County Mental Hospital, Hatton.—Jun. Asst. M.O. £350.
West London Hospital, Hammersmith, W.—Hon. Asst. Surg. to Genito-Urinary Dept.
Winchester, Royal Hampshire County Hospital.—H.S. At rate of £100.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at North Manchester (Lancs.)